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FIRST LESSONS

IN

ARITHMETIC,

COMBINING

THE ORAL METHOD,

WITH

THE METHOD OF TEACHING THE COMBINATIONS
OF FIGURES BY SIGHT.

DESIGNED FOR BEGINNERS.

BY

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AND PERSPECTIVE, ANALYTICAL GEOMETRY, AND
DIFFERENTIAL AND INTEGRAL CALCULUS.

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PREFACE.

THIS book, entitled FIRST LESSONS IN ARITHMETIC, is designed for beginners. It explains the first steps in a course of Arithmetical instruction.

It begins with counting, and using the common language, the pupil is advanced step by step through all the simple combinations of numbers.

In order that the pupil may be impressed with the fact that numbers express a collection of units, or things of the same kind, the unit, in the beginning, is represented by a star, and the child should be made to count the stars in all cases where they are used.

Having once fixed in the mind a correct impression of numbers, it was deemed no longer necessary to represent the unit by a symbol; and hence, the use of the star is then discontinued.

Having presented the combinations of numbers by the common language, we next teach them by means of figures: that is, we so train the mind that it shall, by the aid of the eye alone, catch instantly the idea which any combination of figures is designed to express. We thus present the combinations of figures purely through the arithmetical symbols, so that the pupil is not obliged to pause at every step and translate his conceptions into common language, and then re-translate them into the *language of arithmetic.*

For example, when he sees two numbers, as 4 and 8, to be added, he shall not pause and say, 4 and 8 are 12, but shall be so trained as to repeat 12 at once, as is always done by an experienced accountant. So, if the difference of these numbers is to be found, he shall at once say 4, and not 4 from 8 leaves 4. If he desires their product, he will say 32 ; if their quotient, 2: and the same in all similar cases.

This is all to be done by *the simple process of reading ;* and the method consists,

1st. In teaching the arithmetical alphabet, and

2dly. In teaching the combinations of the alphabet, which become the exponents, or signs, of ideas.

After this is done, the pupils of a class should be taught to read together, all the combinations, in the same manner as they practise reading lessons in our common language.

Having gone through with all the combinations of the unit, forming the arithmetic of whole numbers, we next consider its divisions, forming the arithmetic of fractions. On this part of the work great care has been bestowed. Each fraction, from one-half to one-twelfth, inclusive, is treated separately, and the general method is commended to the careful examination of teachers.

New York, August, 1849.

FIRST LESSONS

IN

ARITHMETIC.

SECTION FIRST.

LESSON I.
Counting.

One, ... *

Two, ... * *

Three, ... * * *

Four, ... * * * *

Five, ... * * * * *

Six, ... * * * * * *

Seven, ... * * * * * * *

Eight, ... * * * * * * * *

Nine, ... * * * * * * * * *

Ten, ... * * * * * * * * * *

Eleven, ... * * * * * * * * * * *

Twelve, ... * * * * * * * * * * * *

-Thirteen, ... * * * * * * * * * * * * *

Fourteen, ... * * * * * * * * * * * * * *

Fifteen, ... * * * * * * * * * * * * * * *

Sixteen, . . . * * * * * * * * * * * * * * * *

Seventeen, . * * * * * * * * * * * * * * * * *

Eighteen, . * * * * * * * * * * * * * * * * * *

Nineteen, * * * * * * * * * * * * * * * * * * *

Twenty, *

LESSON II.

Figures from One to Twenty.

```
1   . . . . . . . . . . . . . . . . . . . *
2   . . . . . . . . . . . . . . . . . . * *
3   . . . . . . . . . . . . . . . . . * * *
4   . . . . . . . . . . . . . . . . * * * *
5   . . . . . . . . . . . . . . . * * * * *
6   . . . . . . . . . . . . . . * * * * * *
7   . . . . . . . . . . . . . * * * * * * *
8   . . . . . . . . . . . . * * * * * * * *
9   . . . . . . . . . . . * * * * * * * * *
10  . . . . . . . . . . * * * * * * * * * *
11  . . . . . . . . . * * * * * * * * * * *
12  . . . . . . . . * * * * * * * * * * * *
13  . . . . . . . * * * * * * * * * * * * *
14  . . . . . . * * * * * * * * * * * * * *
15  . . . . . * * * * * * * * * * * * * * *
16  . . . . * * * * * * * * * * * * * * * *
17  . . . * * * * * * * * * * * * * * * * *
18  . . * * * * * * * * * * * * * * * * * *
19  . * * * * * * * * * * * * * * * * * * *
20  * * * * * * * * * * * * * * * * * * * *
```

Which figure stands for two? Which figure stands for four? Which figure stands for nine? Which stands for eight? What stands for ten? What stands for twelve? What stands for fourteen? What stands for sixteen? What stands for eighteen? What stands for twenty? What stands for seventeen? What stands for fifteen? What stands for nineteen? 　　　　 ¹ₐ for thirteen?

LESSON III.

Figures from One to One Hundred.

Naught	. . 0	Thirty-four . 34	Sixty-eight . 68
One	. . . 1	Thirty-five . 35	Sixty-nine . 69
Two	. . . 2	Thirty-six . 36	Seventy . . 70
Three .	. . 3	Thirty-seven 37	Seventy-one . 71
Four	. . . 4	Thirty-eight . 38	Seventy-two . 72
Five	. . . 5	Thirty-nine . 39	Seventy-three 73
Six .	. . . 6	Forty . . 40	Seventy-four 74
Seven .	. . 7	Forty-one . 41	Seventy-five . 75
Eight .	. . 8	Forty-two . 42	Seventy-six . 76
Nine	. . . 9	Forty-three . 43	Seventy-seven 77
Ten	. . . 10	Forty-four . 44	Seventy-eight 78
Eleven	. . 11	Forty-five . 45	Seventy-nine 79
Twelve	. . 12	Forty-six . . 46	Eighty . . 80
Thirteen .	. 13	Forty-seven . 47	Eighty-one . 81
Fourteen .	. 14	Forty-eight . 48	Eighty-two . 82
Fifteen	. . 15	Forty-nine . 49	Eighty-three . 83
Sixteen	. . 16	Fifty . . . 50	Eighty-four . 84
Seventeen	. 17	Fifty-one . 51	Eighty-five . 85
Eighteen .	. 18	Fifty-two . . 52	Eighty-six . 86
Nineteen .	. 19	Fifty-three . 53	Eighty-seven 87
Twenty	. . 20	Fifty-four . 54	Eighty-eight 88
Twenty-one .	21	Fifty-five . 55	Eighty-nine . 89
Twenty-two .	22	Fifty-six . . 56	Ninety . 90
Twenty-three	23	Fifty-seven . 57	Ninety-one . 91
Twenty-four.	24	Fifty-eight . 58	Ninety-two . 92
Twenty-five .	25	Fifty-nine . 59	Ninety-three . 93
Twenty-six .	26	Sixty . . . 60	Ninety-four . 94
Twenty-seven	27	Sixty-one . . 61	Ninety-five . 95
Twenty-eight	28	Sixty-two . . 62	Ninety-six . 96
Twenty-nine	29	Sixty-three . 63	Ninety-seven 97
Thirty .	. . 30	Sixty-four . 64	Nine-eight . 98
Thirty-one	. 31	Sixty-five . . 65	Ninety-nine . 99
Thirty-two	*. 32*	Sixty-six . . 66	One hundred 100
Thirty-three	*. 33*	Sixty-seven . 67	Two hundred 200

LESSON IV.

Figures to be read.

1	45	79	59	26	14
5	16	97	96	40	43
7	39	81	53	82	67
19	93	18	71	80	83
27	63	72	22	88	10
29	30	28	23	37	62
36	78	100	32	20	61
99	48	89	52	94	96
17	84	98	85	91	25
21	51	54	58	74	70
87	15	65	31	13	68

What stands for twenty-one? What stands for twenty-five? What stands for thirty? What stands for thirty-seven? What stands for sixty-one? What stands for seventy-five? What stands for eighty-six? What stands for ninety-one? What stands for sixty-nine? What stands for twenty-eight? What stands for forty-one? What stands for fifty-six?

Write the following numbers, in figures, on the slate:

Twenty-one. Twenty-six. Twenty-nine. Thirty-five. Sixty-seven. Ninety-eight. Six. Eighty-one. Eighty-seven. Eighty-nine. Forty-six. Fifty-seven. Fifty-nine. Sixty-four. One hundred. Seventy-five. Seventy. Sixty. Fifty. Ten. Twelve. Fourteen. Nineteen. Twenty. Twenty-six. Ninety-one.

LESSON V.
Roman Table.

I	One	XX .	Twenty
II	Two	XXI .	Twenty-one
III . . .	Three	XXX .	Thirty
IV . . .	Four	XL .	Forty
V	Five	L . .	Fifty
VI . . .	Six	LX .	Sixty
VII . . .	Seven	LXX .	Seventy
VIII . . .	Eight	LXXX	Eighty
IX . . .	Nine	XC . .	Ninety
X	Ten	C . .	One hundred
XI . . .	Eleven	CC . .	Two hundred
XII . . .	Twelve	CCC .	Three hundred
XIII . . .	Thirteen	CCCC .	Four hundred
XIV . . .	Fourteen	D . .	Five hundred
XV . . .	Fifteen	DC . .	Six hundred
XVI . . .	Sixteen	DCC .	Seven hundred
XVII . .	Seventeen	DCCC .	Eight hundred
XVIII . .	Eighteen	DCCCC	Nine hundred
XIX . . .	Nineteen	M . .	One thousand

This table is read, one I, one; two I's, two; three I's, three; IV, four, &c.

What stands for two? What stands for four? What stands for five? What stands for eight? What stands for ten? What stands for twenty? What stands for thirty? What stands for forty? What stands for fifty? What stands for sixty? What stands for seventy? What stands for eighty? What stands for ninety? What stands for one hundred? What stands for five hundred? What for one thousand?

LESSON VI.

In which One is added to each Number as far as Ten.

One and one are how many ?
 *   *

One and two are how many ?
 *   * *

One and three are how many ?
 *   * * *

One and four are how many ?
 *   * * * *

One and five are how many ?
 *   * * * * *

One and six are how many ?
 *   * * * * * *

One and seven are how many ?
 *   * * * * * * *

One and eight are how many ?
 *   * * * * * * * *

One and nine are how many ?
 *   * * * * * * * * *

One and ten are how many ?
 *   * * * * * * * * * *

Commit the following Table to memory :—

1 and 1 are 2		1 and 6 are 7
1 and 2 are 3		1 and 7 are 8
1 and 3 are 4		1 and 8 are 9
1 and 4 are 5		1 and 9 are 10
1 and 5 are 6		1 and 10 are 11

LESSON VII.

In which Two is added to each Number as far as Ten.

Two   and   one   are how many ?
* *   *

Two   and   two   are how many ?
* *   * *

Two   and   three   are how many ?
* *   * * *

Two   and   four   are how many ?
* *   * * * *

Two   and   five   are how many ?
* *   * * * * *

Two   and   six   are how many ?
* *   * * * * * *

Two   and   seven   are how many ?
* *   * * * * * * *

Two   and   eight   are how many ?
* *   * * * * * * * *

Two   and   nine   are how many ?
* *   * * * * * * * * *

Two   and   ten   are how many ?
* *   * * * * * * * * * *

Commit the following Table to memory :—

2 and 1 are 3	2 and 6 are 8
2 and 2 are 4	2 and 7 are 9
2 and 3 are 5	2 and 8 are 10
2 and 4 are 6	2 and 9 are 11
2 and 5 are 7	2 and 10 are 12

LESSON VIII.

In which the Number Three is added to each Number as far as Ten.

Three	and	one	are how many ?
* * *		*	
Three	and	two	are how many ?
* * *		* *	
Three	and	three	are how many ?
* * *		* * *	
Three	and	four	are how many ?
* * *		* * * *	
Three	and	five	are how many ?
* * *		* * * * *	
Three	and	six	are how many ?
* * *		* * * * * *	
Three	and	seven	are how many ?
* * *		* * * * * * *	
Three	and	eight	are how many ?
* * *		* * * * * * * *	
Three	and	nine	are how many ?
* * *		* * * * * * * * *	
Three	and	ten	are how many ?
* * *		* * * * * * * * * *	

Commit the following Table to memory :—

3 and 1 are 4	3 and 6 are 9
3 and 2 are 5	3 and 7 are 10
3 and 3 are 6	3 and 8 are 11
. 3 and 4 are 7	3 and 9 are 12
3 and 5 are 8	3 and 10 are 13

LESSON IX.

In which the Number Four is added to each Number as far as Ten.

Four   and   one   are how many ?
* * * *   *

Four   and   two   are how many ?
* * * *   * *

Four   and   three   are how many ?
* * * *   * * *

Four   and   four   are how many ?
* * * *   * * * *

Four   and   five   are how many ?
* * * *   * * * * *

Four   and   six   are how many ?
* * * *   * * * * * *

Four   and   seven   are how many ?
* * * *   * * * * * * *

Four   and   eight   are how many ?
* * * *   * * * * * * * *

Four   and   nine   are how many ?
* * * *   * * * * * * * * *

Four   and   ten   are how many ?
* * * *   * * * * * * * * * * .

Commit the following Table to memory :—

4 and 1 are 5	4 and 6 are 10
4 and 2 are 6	4 and 7 are 11
4 and 3 are 7	4 and 8 are 12
4 and 4 are 8	4 and 9 are 13
4 and 5 are 9	4 and 10 are 14

LESSON X.

In which the Number Five is added to each Number as far as Ten.

Five   and   one   are how many ?
* * * * *   *

Five   and   two   are how many ?
* * * * *   * *

Five   and   three   are how many ?
* * * * *   * * *

Five   and   four   are how many ?
* * * * *   * * * *

Five   and   five   are how many ?
* * * * *   * * * * *

Five   and   six   are how many ?
* * * * *   * * * * * *

Five   and   seven   are how many ?
* * * * *   * * * * * * *

Five   and   eight   are how many ?
* * * * *   * * * * * * * *

Five   and   nine   are how many ?
* * * * *   * * * * * * * * *

Five   and   ten   are how many ?
* * * * *   * * * * * * * * * *

Commit the following Table to memory :—

5 and 1 are 6	5 and 6 are 11
5 and 2 are 7	5 and 7 are 12
5 and 3 are 8	5 and 8 are 13
5 and 4 are 9	5 and 9 are 14
5 and 5 are 10	5 and 10 are 15

LESSON XI.

In which the Number Six is added to each Number as far as Ten.

Six   and   one   are how many?
* * * * * *   *

Six   and   two   are how many?
* * * * * *   * *

Six   and   three   are how many?
* * * * * *   * * *

Six   and   four   are how many?
* * * * * *   * * * *

Six   and   five   are how many?
* * * * * *   * * * * *

Six   and   six   are how many?
* * * * * *   * * * * * *

Six   and   seven   are how many?
* * * * * *   * * * * * * *

Six   and   eight   are how many?
* * * * * *   * * * * * * * *

Six   and   nine   are how many?
* * * * * *   * * * * * * * * *

Six   and   ten   are how many?
* * * * * *   * * * * * * * * * *

Commit the following Table to memory :—

6 and 1 are 7			6 and 6 are 12		
6 and 2 are 8			6 and 7 are 13		
6 and 3 are 9			6 and 8 are 14		
6 and 4 are 10			6 and 9 are 15		
6 and 5 are 11			6 and 10 are 16		

LESSON XIV.

In which the Number Nine is added to each Number as far as Ten.

Nine and one are how many ?
* * * * * * * * *   *

Nine and two are how many ?
* * * * * * * * *   * *

Nine and three are how many ?
* * * * * * * * *   * * *

Nine and four are how many ?
* * * * * * * * *   * * * *

Nine and five are how many ?
* * * * * * * * *   * * * * *

Nine and six are how many ?
* * * * * * * * *   * * * * * *

Nine and seven are how many ?
* * * * * * * * *   * * * * * * *

Nine and eight are how many ?
* * * * * * * * *   * * * * * * * *

Nine and nine are how many ?
* * * * * * * * *   * * * * * * * * *

Nine and ten are how many ?
* * * * * * * * *   * * * * * * * * * *

Commit the following Table to memory :—

9 and 1 are 10	9 and 6 are 15
9 and 2 are 11	9 and 7 are 16
9 and 3 are 12	9 and 8 are 17
9 and 4 are 13	9 and 9 are 18
9 and 5 are 14	9 and 10 are 19

LESSON XV.

*In which the Number Ten is added to each Number as
far as Ten.*

Ten   and   one are how many ?
* * * * * * * * * *   *

Ten   and   two are how many ?
* * * * * * * * * *   * *

Ten   and   three are how many ?
* * * * * * * * * *   * * *

Ten   and   four are how many ?
* * * * * * * * * *   * * * *

Ten   and   five are how many ?
* * * * * * * * * *   * * * * *

Ten   and   six are how many ?
* * * * * * * * * *   * * * * * *

Ten   and   seven are how many ?
* * * * * * * * * *   * * * * * * *

Ten   and   eight are how many ?
* * * * * * * * * *   * * * * * * * *

Ten   and   nine are how many ?
* * * * * * * * * *   * * * * * * * * *

Ten   and   ten are how many ?
* * * * * * * * * *   * * * * * * * * * *

Commit the following Table to memory :—

10 and 1 are 11	10 and 6 are 16
10 and 2 are 12	10 and 7 are 17
10 and 3 are 13	10 and 8 are 18
10 and 4 are 14	10 and 9 are 19
10 and 5 are 15	10 and 10 are 20

LESSON XVI.

Examples in Addition.

1. How many fingers have you on one hand, not counting the thumb? How many have you on both hands? Counting the thumb, how many have you on each hand? How many on both? One and four are how many? One and nine how many?

2. How many are two and four? Two and seven? Two and nine? Two and eight? Two and three? Two and five? Two and ten?

3. John has three nuts in one hand and five in the other: how many in both? James has three pencils and John five: how many have they between them? Charles has three rabbits and James nine: how many rabbits have both the boys? John has three quills and Charles seven: how many quills have both of them?

4. John has four chesnuts in one hand and three in the other: how many has he in both? Charles has four quills and John seven: how many have both of them? John and James have each four tops: how many have they between them? William has four birds in one cage and seven in another: how many birds in both cages?

5. James has five marbles in one hand and eight in the other: how many in both? Charles has five cents, and his father gives him seven: how many will he then have? If his father gives him nine: *how many* will he have? If he gives him ten: *how many?*

LESSON XVII.

Examples in Addition.

1. William carries six apples to school in his basket and Henry four: how many apples in both baskets? John has six apples and his sister Jane gives him five: how many will he then have? Charles has six marbles and wins eight from John: how many will he then have?

2. James has seven oranges in one basket and six in another: how many in both? William has seven apples and John gives him nine: how many will he then have? A father has two sons and gives seven cents to each: how many cents does he give to both? If he gives seven cents to one and ten cents to the other: how many cents will he give to both?

3. A boy has eight marbles and gains five: how many will he then have? If he has eight and gains nine: how many? If he has eight and gains ten: how many?

4. Charles has nine apples and buys five more: how many will he then have? If he has nine and buys eight more: how many will he have? If he has eight and buys nine: how many?

5. James has ten pencils and then buys eight: how many will he then have? John gives to Henry ten chesnuts and to William nine: how many does he give away in all? Charles has two apples and John gives him seven: how many will he then have? If John had given him eight: how many? *If he had given* him ten: how many?

LESSON XVIII.
Examples in Addition.

1. Eleven and one are how many ? Eleven and two ? Eleven and three ? Eleven and four ? Eleven and five ? Eleven and six ? Eleven and seven ? Eleven and eight ? Eleven and nine ? Eleven and ten ?

2. Twenty-two and one are how many ? Twenty-two and two ? Twenty-two and three ? Twenty-two and four ? Twenty-two and five ? Twenty-two and six ? Twenty-two and seven ? Twenty-two and eight ? Twenty-two and nine ? Twenty-two and ten ?

3. Thirty-three and one are how many ? Thirty-three and two are how many ? Thirty-three and three ? Thirty-three and four ? Thirty-three and five ? Thirty-three and six ? Thirty-three and seven ? Thirty-three and eight ? Thirty-three and nine ? Thirty-three and ten ?

4. Forty-four and one are how many ? Forty-four and two ? Forty-four and three ? Forty-four and five ? Forty-four and six ? Forty-four and seven ? Forty-four and eight ? Forty-four and nine ? Forty-four and ten ?

5. Fifty-five and one are how many ? Fifty-five and two are how many ? Fifty-five and three ? Fifty-five and four ? Fifty-five and five ? Fifty-five and six ? Fifty-five and seven ? Fifty-five and eight ? Fifty-five and nine ? Fifty-five and ten ? *Fifty-six* and two are how many ? Fifty-six and *three ? Fifty*-six and four ? Fifty-six and five ?

LESSON XIX.

Examples in Addition.

1. Sixty-six and one are how many? Sixty-six and two are how many? Sixty-six and three? Sixty-six and four? Sixty-six and five? Sixty-six and six? Sixty-six and seven? Sixty-six and eight? Sixty-six and nine? Sixty-six and ten?

2. Seventy-seven and one are how many? Seventy-seven and two are how many? Seventy-seven and three? Seventy-seven and four? Seventy-seven and five? Seventy-seven and six? Seventy-seven and seven? Seventy-seven and eight? Seventy-seven and nine? Seventy-seven and ten?

3. Eighty-eight and one are how many? Eighty-eight and two are how many? Eighty-eight and three? Eighty-eight and four? Eighty-eight and five? Eighty-eight and six? Eighty-eight and seven? Eighty-eight and eight? Eighty-eight and nine? Eighty-eight and ten?

4. Ninety-nine and one are how many? Ninety-nine and two are how many? Ninety-nine and three? Ninety-nine and four? Ninety-nine and five? Ninety-nine and six? Ninety-nine and seven? Ninety-nine and eight? Ninety-nine and nine? Ninety-nine and ten?

5. Ninety-eight and one are how many? Ninety-eight and two are how many? Ninety-eight and three? Ninety-eight and four? Ninety-eight and five? Ninety-eight and six? Ninety-eight and seven? Ninety-eight and nine?

LESSON XX.

Numeration, or Reading Figures.

Ten   Units   make   one   Ten.
Ten   Tens   make   one   Hundred.
Ten   Hundreds   make   one   Thousand.

	Thousands.	Hundreds.	Tens.	Units.
Commit to memory the words Units, Tens, Hundreds, Thousands.				
Four Units, - - - - - - - - -				4
Six Units and five Tens, - - - - -			5	6
Six Units, three Tens, two Hundreds, -		2	3	6
8 Units, 7 Tens, 5 Hundreds, 3 Thousands,	3	5	7	8

1. Write three thousand.   - - - - *Ans.* 3000
2. Write three hundred and seventy-five. *Ans.*   375
3. Write six hundred and twenty-one. - *Ans.*   621

Numerate the following figures :—

1267	1675	8742	6728
8941	109	405	4213
7840	2009	87	3070
8041	2104	90	8041
7087	3067	990	7012
100	7032	9999	8405
211	8015	8980	8705

GENERAL NUMERATION TABLE.[*]

Hundreds of Quadrillions	Tens of Quadrillions	Quadrillions	Hundreds of Trillions	Tens of Trillions	Trillions	Hundreds of Billions	Tens of Billions	Billions	Hundreds of Millions	Tens of Millions	Millions	Hundreds of Thousands	Tens of Thousands	Thousands	Hundreds	Tens	Units
																	6
																7	5
															8	7	9
														6	0	2	3
													8	2	3	0	1
												1	2	3	0	8	7
											7	6	2	8	7	3	5
										4	3	2	1	0	4	6	0
									5	4	8	7	2	1	0	8	7
								6	2	4	5	2	8	9	4	2	1
							7	2	5	4	9	1	3	6	8	2	2
						8	9	4	6	0	2	0	4	3	2	8	8
					7	6	4	1	2	4	8	9	0	7	4	5	6
				8	4	9	1	2	8	7	6	4	1	0	2	8	5
			9	1	2	7	6	1	2	5	7	3	2	7	8	2	6
		6	4	0	7	2	1	2	9	3	6	8	7	6	5	4	1
	5	7	2	8	9	6	7	8	5	4	1	2	9	7	3	1	3
9	2	0	3	2	3	8	4	2	7	6	8	3	1	9	6	7	5

The words at the head of the numeration table, *units, tens, hundreds, &c.*, are equally applicable to all numbers, and must be committed to memory; after which the pupil may read the table.

[*] *Note*—This table is formed according to the French method of numeration. The English method gives six places to thousands, &c.

SUGGESTIONS TO TEACHERS.

Thus far, we have indicated the relation between numbers by means of the common language.

We come now to the method of teaching their combinations by means of figures and the eye.

For example, after having taught the combinations in addition, in the usual way, as 1 and 1 are two; 1 and 2 are three, &c., let each set of combinations be written separately on the blackboard, as on the following page.

Let the teacher then take a pointer, and point to the figures 1 and 1, and let the whole class answer 2. Let him then point to the figures 1 and 2, and let the class answer 3, and so on for the entire table. Let each set of combinations be read in the same manner.

This reading will save the use of four words in each combination. Thus, instead of saying one and six are seven, the eye glances at 1 and 6, and seven is uttered immediately. This method of operating on numbers by the combined process of sight and thought, will train the mind to the most rapid and exact methods of computation. The drill of the class should be continued until all the combinations can be read by the eye. Let each of the ten sets be taught in the same manner—and *thoroughly taught.*

The readings in subtraction, multiplication, and *division, are to* be taught in a similar manner.

LESSON XXI.

For the Eye.

1	2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1	1

For the Eye.

1	2	3	4	5	6	7	8	9	10
2	2	2	2	2	2	2	2	2	2

For the Eye.

1	2	3	4	5	6	7	8	9	10
3	3	3	3	3	3	3	3	3	3

For the Eye.

1	2	3	4	5	6	7	8	9	10
4	4	4	4	4	4	4	4	4	4

For the Eye.

1	2	3	4	5	6	7	8	9	10
5	5	5	5	5	5	5	5	5	5

For the Eye.

1	2	3	4	5	6	7	8	9	10
6	6	6	6	6	6	6	6	6	6

For the Eye.

1	2	3	4	5	6	7	8	9	10
7	7	7	7	7	7	7	7	7	7

For the Eye.

1	2	3	4	5	6	7	8	9	10
8	8	8	8	8	8	8	8	8	8

For the Eye.

1	2	3	4	5	6	7	8	9	10
9	9	9	9	9	9	9	9	9	9

For the Eye.

1	2	3	4	5	6	7	8	9	10
10	10	10	10	10	10	10	10	10	10

Having written the column of 2's on the black-board, let the pupils add them when pointed, beginning with the lower figure. The column of 3's being written, let them also be added, the class repeating the words six, nine, twelve, &c., and none others. Let the 4's and each of the following columns be added in the same manner. Let the same method be pursued through the entire tables of addition.

———

LESSON XXII.

2	1	0	1	2	2	1	1
2	0	1	2	1	0	2	0
2	2	2	0	0	1	0	2
2	0	1	1	2	2	2	1
2	1	2	2	1	0	1	0
2	2	0	0	0	1	0	2
2	2	1	2	0	2	1	1
2	0	2	1	1	0	0	2
2	2	1	0	2	1	2	0
2	1	0	2	2	2	1	1
2	0	1	1	1	0	0	2
2	2	2	0	0	1	2	1

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and *accuracy*.

LESSON XXIII.

3	0	1	0	1	2	2	1
3	1	2	2	3	3	0	2
3	2	3	3	0	1	3	0
3	3	0	2	2	3	2	2
3	2	3	1	1	1	1	1
3	0	1	0	3	2	3	3
3	1	2	2	2	3	2	2
3	3	2	1	1	2	1	1
3	2	1	3	2	1	2	0
3	0	3	2	3	3	3	1
3	2	2	1	0	2	2	2
3	3	1	4	1	1	0	3

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and accuracy.

LESSON XXIV.

4	1	2	3	1	3	4	1
4	2	3	2	0	2	1	2
4	3	1	1	2	1	2	3
4	4	4	4	0	4	0	4
4	1	2	1	4	0	1	1
4	0	3	2	3	2	2	2
4	3	1	4	2	1	0	3
4	4	4	0	1	3	4	4
4	0	2	3	1	4	3	3
4	2	0	0	2	2	2	2
4	3	1	3	1	1	1	1
4	0	3	2	4	1	3	2

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and accuracy.

LESSON XXV.

5	4	1	4	0	1	0	1
5	3	3	5	1	2	2	2
5	1	5	3	2	3	1	3
5	2	4	0	3	4	3	4
5	5	0	1	4	5	4	5
5	0	5	2	5	4	5	0
5	2	0	3	3	2	0	2
5	5	5	0	2	0	1	0
5	0	4	2	0	1	0	1
5	3	3	3	1	2	2	4
5	2	4	4	2	3	3	3
5	2	5	0	0	2	1	2

Let the pupil be exercised in reading the figur
in each column, until he can do it with facility ar
accuracy.

LESSON XXVI.

6	5	6	6	5	1	2	3
6	6	4	3	4	2	6	2
6	5	6	0	3	0	4	1
6	6	4	1	6	6	3	0
6	5	0	4	4	4	0	4
6	6	6	5	5	3	2	3
6	5	4	3	1	2	4	0
6	6	0	0	0	0	5	4
6	5	6	1	2	1	6	5
6	0	4	2	1	3	0	6
6	5	0	1	3	2	4	4
6	0	6	6	0	4	3	3

Let the pupil be exercised in reading the figur
in each column, until he can do it with facility s
accuracy.

LESSON XXVII.

7	0	1	5	4	7	0	6
7	1	0	3	3	4	7	5
7	2	3	2	2	3	6	4
7	3	2	1	1	2	5	3
7	4	1	0	0	1	4	2
7	5	7	4	6	0	3	1
7	6	6	3	7	7	2	0
7	7	3	5	5	6	1	6
7	6	5	4	4	5	4	3
7	5	4	3	3	4	5	5
7	4	3	0	2	3	6	4
7	3	2	4	1	2	7	3

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and accuracy.

LESSON XXVIII.

8	8	0	6	1	7	0	4
8	7	1	7	2	6	2	3
8	6	2	8	3	3	8	2
8	5	4	0	4	2	7	1
8	4	8	1	5	0	6	0
8	3	7	2	8	1	3	4
8	2	6	3	6	2	2	3
8	1	5	4	7	3	0	2
8	0	4	5	5	4	1	1
8	3	3	6	6	6	3	4
8.	2	2	7	2	7	2	1
8	1	1	8	1	8	1	6

Let the pupil be exercised in reading the figures *in each column,* until he can do it with facility and *accuracy.*

LESSON XXIX.

9	9	0	1	7	5	4	6
9	8	4	2	6	4	3	7
9	7	9	9	3	5	2	8
9	6	1	8	4	3	6	9
9	5	2	4	5	2	7	4
9	4	3	5	8	1	0	5
9	3	4	4	7	4	1	6
9	2	9	3	6	6	2	7
9	1	5	2	2	7	0	0
9	0	6	0	0	8	8	8
9	9	7	7	1	9	7	3
9	8	8	4	3	7	4	7

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and accuracy.

LESSON XXX.

10	10	0	7	6	5	3	5
10	9	0	6	7	4	2	2
10	8	1	4	4	3	1	1
10	7	2	2	1	2	0	3
10	6	3	1	2	1	3	6
10	5	4	3	0	6	8	7
10	4	5	4	3	1	4	0
10	3	6	0	2	2	9	8
10	2	7	3	1	3	0	4
10	1	8	2	0	0	4	3
10	0	9	1	4	4	5	2
10	0	0	0	3	2	6	1

Let the pupil be exercised in reading the figures in each column, until he can do it with facility and accuracy.

LESSON XXXI.

10	10	10	10	10	10	10	10	10	10
1	2	3	4	5	6	7	8	9	10

11	11	11	11	11	11	11	11	11	11
1	2	3	4	5	6	7	8	9	10

12	12	12	12	12	12	12	12	12	12
1	2	3	4	5	6	7	8	9	10

13	13	13	13	13	13	13	13	13	13
1	2	3	4	5	6	7	8	9	10

14	14	14	14	14	14	14	14	14	14
1	2	3	4	5	6	7	8	9	10

15	15	15	15	15	15	15	15	15	15
1	2	3	4	5	6	7	8	9	10

16	16	16	16	16	16	16	16	16	16
1	2	3	4	5	6	7	8	9	10

17	17	17	17	17	17	17	17	17	17
1	2	3	4	5	6	7	8	9	10

18	18	18	18	18	18	18	18	18	18
1	2	3	4	5	6	7	8	9	10

19	19	19	19	19	19	19	19	19	19
1	2	3	4	5	6	7	8	9	10

LESSON XXXII.

20	20	20	20	20	20	20	20	20	20
1	2	3	4	5	6	7	8	9	10

21	21	21	21	21	21	21	21	21	21
1	2	3	4	5	6	7	8	9	10

22	22	22	22	22	22	22	22	22	22
1	2	3	4	5	6	7	8	9	10

23	23	23	23	23	23	23	23	23	23
1	2	3	4	5	6	7	8	9	10

24	24	24	24	24	24	24	24	24	24
1	2	3	4	5	6	7	8	9	10

25	25	25	25	25	25	25	25	25	25
1	2	3	4	5	6	7	8	9	10

26	26	26	26	26	26	26	26	26	26
1	2	3	4	5	6	7	8	9	10

27	27	27	27	27	27	27	27	27	27
1	2	3	4	5	6	7	8	9	10

28	28	28	28	28	28	28	28	28	28
1	2	3	4	5	6	7	8	9	10

29	29	29	29	29	29	29	29	29	29
1	2	3	4	5	6	7	8	9	10

LESSON XXXIII.

30	30	30	30	30	30	30	30	30	30
1	2	3	4	5	6	7	8	9	10
31	31	31	31	31	31	31	31	31	31
1	2	3	4	5	6	7	8	9	10
32	32	32	32	32	32	32	32	32	32
1	2	3	4	5	6	7	8	9	10
33	33	33	33	33	33	33	33	33	33
1	2	3	4	5	6	7	8	9	10
34	34	34	34	34	34	34	34	34	34
1	2	3	4	5	6	7	8	9	10
35	35	35	35	35	35	35	35	35	35
1	2	3	4	5	6	7	8	9	10
36	36	36	36	36	36	36	36	36	36
1	2	3	4	5	6	7	8	9	10
37	37	37	37	37	37	37	37	37	37
1	2	3	4	5	6	7	8	9	10
38	38	38	38	38	38	38	38	38	38
1	2	3	4	5	6	7	8	9	10
39	39	39	39	39	39	39	39	39	39
1	2	3	4	5	6	7	8	9	10

LESSON XXXIV.

40	40	40	40	40	40	40	40	40	40
1	2	3	4	5	6	7	8	9	10

41	41	41	41	41	41	41	41	41	41
1	2	3	4	5	6	7	8	9	10

42	42	42	42	42	42	42	42	42	42
1	2	3	4	5	6	7	8	9	10

43	43	43	43	43	43	43	43	43	43
1	2	3	4	5	6	7	8	9	10

44	44	44	44	44	44	44	44	44	44
1	2	3	4	5	6	7	8	9	10

45	45	45	45	45	45	45	45	45	45
1	2	3	4	5	6	7	8	9	10

46	46	46	46	46	46	46	46	46	46
1	2	3	4	5	6	7	8	9	10

47	47	47	47	47	47	47	47	47	47
1	2	3	4	5	6	7	8	9	10

48	48	48	48	48	48	48	48	48	48
1	2	3	4	5	6	7	8	9	10

49	49	49	49	49	49	49	49	49	49
1	2	3	4	5	6	7	8	9	10

LESSON XXXV.

50	50	50	50	50	50	50	50	50	50
1	2	3	4	5	6	7	8	9	10

51	51	51	51	51	51	51	51	51	51
1	2	3	4	5	6	7	8	9	10

52	52	52	52	52	52	52	52	52	52
1	2	3	4	5	6	7	8	9	10

53	53	53	53	53	53	53	53	53	53
1	2	3	4	5	6	7	8	9	10

54	54	54	54	54	54	54	54	54	54
1	2	3	4	5	6	7	8	9	10

55	55	55	55	55	55	55	55	55	55
1	2	3	4	5	6	7	8	9	10

56	56	56	56	56	56	56	56	56	56
1	2	3	4	5	6	7	8	9	10

57	57	57	57	57	57	57	57	57	57
1	2	3	4	5	6	7	8	9	10

58	58	58	58	58	58	58	58	58	58
1	2	3	4	5	6	7	8	9	10

59	59	59	59	59	59	59	59	59	59
1	2	3	4	5	6	7	8	9	10

LESSON XXXVI.

60	60	60	60	60	60	60	60	60	60
1	2	3	4	5	6	7	8	9	10

61	61	61	61	61	61	61	61	61	61
1	2	3	4	5	6	7	8	9	10

62	62	62	62	62	62	62	62	62	62
1	2	3	4	5	6	7	8	9	10

63	63	63	63	63	63	63	63	63	63
1	2	3	4	5	6	7	8	9	10

64	64	64	64	64	64	64	64	64	64
1	2	3	4	5	6	7	8	9	10

65	65	65	65	65	65	65	65	65	65
1	2	3	4	5	6	7	8	9	10

66	66	66	66	66	66	66	66	66	66
1	2	3	4	5	6	7	8	9	10

67	67	67	67	67	67	67	67	67	67
1	2	3	4	5	6	7	8	9	10

68	68	68	68	68	68	68	68	68	68
1	2	3	4	5	6	7	8	9	10

69	69	69	69	69	69	69	69	69	69
1	2	3	4	5	6	7	8	9	10

LESSON XXXVII.

70	70	70	70	70	70	70	70	70	70
1	2	3	4	5	6	7	8	9	10
71	71	71	71	71	71	71	71	71	71
1	2	3	4	5	6	7	8	9	10
72	72	72	72	72	72	72	72	72	72
1	2	3	4	5	6	7	8	9	10
73	73	73	73	73	73	73	73	73	73
1	2	3	4	5	6	7	8	9	10
74	74	74	74	74	74	74	74	74	74
1	2	3	4	5	6	7	8	9	10
75	75	75	75	75	75	75	75	75	75
1	2	3	4	5	6	7	8	9	10
76	76	76	76	76	76	76	76	76	76
1	2	3	4	5	6	7	8	9	10
77	77	77	77	77	77	77	77	77	77
1	2	3	4	5	6	7	8	9	10
78	78	78	78	78	78	78	78	78	78
1	2	3	4	5	6	7	8	9	10
79	79	79	79	79	79	79	79	79	79
1	2	3	4	5	6	7	8	9	10

LESSON XL.

1. What is Arithmetic ?

Arithmetic is the science of Numbers.

2. How are numbers expressed in arithmetic ?

Numbers are expressed by certain characters
called figures.

3. How many figures are there ? Ten. 4. Name them.
5. What is Notation ?

Notation is the art of expressing numbers by
figures.

5. What is Numeration ?

Numeration is the art of reading figures correctly
when written.

7. What is the sum of two or more numbers ?

The sum of two or more numbers is a number
which contains as many units as there are in the
numbers added.

8. What is Addition ?

Addition is the process of finding the sum of two
or more numbers.

9. How many parts are there in addition ? Three.
10. What are they ?

1st. Setting down the numbers; 2d. Adding the
columns; and 3d. Writing down the results.

11. How do you set down the numbers for addition ?

Place units under units, tens under tens, hundreds
under hundreds, &c.

12. How do you add up the columns ?

Begin at the right hand, and add up each column
in succession.

13. How do you write down the results ?

Write the sum of any column less than ten under
the column: when the sum is greater than ten, write
the excess over exact tens, and carry to the next
column, and write down the entire sum under the
last column.

LESSON XLI.

(1)	(2)	(3)
10478	306721	1041321
19327	912784	2163419
67049	903670	9548374
45239	715048	7903456
39174	489350	6984387

(4)	(5)	(6)
104721	37041	2704127
999088	23074	2981672
488478	21679	8041428
369108	74127	8974120
437862	89435	4287049

REMARK.—In these Lessons, let the pupil be taught how to set down and carry.

LESSON XLII.

(1)	(2)	(3)
874168	270402	3367041
812230	364172	2740821
904976	369041	6974812
104693	870523	4129047
412704	104712	6781214

(4)	(5)	(6)
812704	267204	9989742
223109	918236	3674214
902231	254181	9782495
678982	298149	4127628
497281	607089	7481497

LESSON XLIII.

(1)	(2)	(3)
104324	204103	390410
212351	316042	210417
104512	413204	302814
453204	216305	213204
532140	412704	321604
214161	302604	330216

(4)	(5)	(6)
210432	403014	202524
203103	212103	210253
312042	320412	210497
130421	152041	324103
124104	410230	312101
512302	310210	305016

LESSON XLIV.

(1)	(2)	(3)
120436	980416	216704
890912	823407	984167
979421	187214	210414
723610	694807	912631
270426	253641	104370
610312	872016	918070
304108	610432	416174
270416	708021	632146
332309	321089	218413
216704	270421	841262
370419	874106	213129
672041	210467	940026

LESSON XLV.

1. What is the sum of 26, 45, 38, and 79 ?
Ans. 188.

2. What is the sum of 8635, 2194, 7421, 5063, 2176, and 1245 ? *Ans.* 26734.

3. What is the sum of 96973, 3741, and 9299 ?
Ans. 110013.

4. What is the sum of 81325, 6784, and 2130 ?
Ans. 90239.

5. A merchant settles with his creditors, and finds that he owes Mr. Jones 60 dollars, Mr. Wilson 150 dollars, Mr. Brown 240 dollars, and Mr. Whiting 100 dollars : how much does he owe in all ?

6. A man borrowed a sum of money, and paid at one time 267 dollars, and afterwards paid the remainder, 325 dollars : how much did he borrow ?
Ans. $592.

7. The mail route from Albany to New York is 144 miles, from New York to Philadelphia 90 miles, from Philadelphia to Baltimore 98 miles, and from Baltimore to Washington City 38 miles : what is the distance from Albany to Washington ?

8. Charles purchases at one time 763 marbles, at another 4663, at another 37, at another 49763, at another 6178, and at another 671 : how many did he buy in all ? *Ans.* 62075.

9. A merchant bought cloth as follows ; at one time 4550 yards, at another 2470, at another 936, at another 700 : how many did he buy in all ?

LESSON LVI.

1. What is the sum of 3607, 1028, 369, and 512 ?   *Ans.* 5516.

2. A grocer bought a quantity of sugar for $827 ; a quantity of fish for $295 ; a quantity of coffee for $321 ; and a lot of tea for $100. What did he pay for the whole ?

3. A father divided his property among his four sons and his widow: to his eldest he gave $6591, to the second $4863, to the third $4000, to the fourth $3969, and to the widow $4583. How much was he worth ?   *Ans.* $24006.

4. George Washington was born in the year 1732, and died at the age of 67 ? In what year did he die ?

5. From the creation of the world to the deluge was 1656 years, and from that time to the time of our Saviour 2348 years. How old is the world at the present time ?

6. A man bought a farm, for which he paid $3678 : he afterwards paid $300 for clearing, $257 for fences, and $627 for out-buildings. How much did the farm cost him ?

7. What is the sum of fifteen millions and forty-nine, fifteen thousand and sixty, eighteen hundred and forty-nine, and one billion and sixteen ?

8. A merchant deposited in a bank at one time $6750, at another $5375, at another $2756, at another $377. How much did he deposit in all ?

Ans. $15258.

SECTION SECOND.

LESSON I.

In which One is taken from each Number as far as Ten.

1. If John has one apple and gives it to William, what will he have left? One from one, what remains?

2. If John has two apples and gives one to William, how many will he have left? One from two, what remains?

3. If John has three apples and gives one to James, how many will he have left? One from three, what remains?

4. If John has four apples and gives one to William, how many are left? One from four, what remains?

5. John has five apples and gives one to Charles: how many are left? One from five, what remains?

6. If John has six apples and gives one to James, how many has he left? One from six, and what remains?

7. If John has seven apples and gives one to Samuel, how many are left? One from seven, what remains?

8. If John has eight apples and gives one to William, how many will be left? One from eight, and what remains?

9. If John has nine apples and gives one to James, how many will be left? One from nine, and what remains?

10. If John has ten apples and gives one to Charles, how many will be left? One from ten, and what remains?

Commit the following Table to memory :—

1 from 1 leaves 0	1 from 6 leaves 5
1 from 2 leaves 1	1 from 7 leaves 6
1 from 3 leaves 2	1 from 8 leaves 7
1 from 4 leaves 3	1 from 9 leaves 8
1 from 5 leaves 4	1 from 10 leaves 9

LESSON II.

In which the Number Two is taken from each Number as far as Ten.

1. If Charles has two apples and gives them both to James, how many will be left? Two from two, and what remains?

2. If Charles has three apples and gives two to James, how many will he have left? Two from three, and what remains?

3. If Charles has four apples and gives two to his sister Mary, how many will he have left? Two from four, and what remains?

4. If Charles has five apples and gives two to his sister, how many will he have left? Two from five, and what remains?

5. If Charles has six apples and gives two to Thomas, how many will he have left? Two from six, and what remains?

6. If Charles has seven apples and gives two to William, how many will he have left? Two from seven, and what remains?

7. If Charles has eight apples and gives two to his sister Jane, how many will he have left? Two from eight, and how many remain?

8. If Charles has nine apples and gives two to John, how many will he have left? Two from nine, and what remains?

9. If Charles has ten apples and gives two to William, how many will he have left? Two from ten, and what remains?

10. A man bought eleven eggs, and found nine bad ones among them: how many were good?

11. Jane bought ten needles, and lost six: how many had she left?

12. Charles bought eight sheets of paper, and spoiled five: how many had he left?

Commit the following Table to memory :—

2 from 2 leaves 0			2 from 7 leaves 5
2 from 3 leaves 1			2 from 8 leaves 6
2 from 4 leaves 2			2 from 9 leaves 7
2 from 5 leaves 3			2 from 10 leaves 8
2 from 6 leaves 4			2 from 11 leaves 9

LESSON III.

In which the Number Three is taken from each Number as far as Ten.

1. If William has three peaches and gives them all to James, how many will he have left? Three from three, and what remains?

2. If William has four peaches and gives three to John, how many will he have left? Three from four, and what remains?

3 If William has five peaches and gives three to his brother, how many will he have left? Three from five, how many remain?

4. If William has six peaches and gives three to his sister, how many will he have left? Three from six, and what remains?

5. If William has seven peaches and gives three of them away, how many will he have left? Three from seven, and what remains?

6. If William has eight peaches and sells three, how many will he have left? Three from eight, and what remains?

7. If William has nine peaches and gives three of them to Charles, how many will he have left? Three from nine, and what remains?

8. If William has ten peaches and gives three to his mother, how many will he have left? Three from ten, and what remains? If he gives one to *his mother,* how many? If he gives two, how many?

Commit the following Table to memory :—

3 from 3 leaves 0		3 from 7 leaves 4	
3 from 4 leaves 1		3 from 8 leaves 5	
3 from 5 leaves 2		3 from 9 leaves 6	
3 from 6 leaves 3		3 from 10 leaves 7	

LESSON IV.

In which the Number Four is taken from each Number as far as Ten.

1. If Jane has four birds in a cage and takes them all out, how many will be left? Four from four, and what remains?

2. If Jane has five birds in a cage and takes out four, how many will be left? Four from five, and what remains?

3. If Jane has six birds in a cage and takes out four, how many will be left? Four from six, and what remains?

4. If Jane has seven birds in a cage and takes out four, how many will be left? Four from seven, and what remains?

5. If Jane has eight birds in a cage and takes out four, how many will be left? Four from eight, and what remains?

6. If Jane has nine birds in a cage and takes out four, how many will be left? Four from nine, and what remains?

7. If Jane has ten birds in a cage and takes out four, how many will be left? Four from ten, and what remains?

Commit the following Table to memory:—

4 from 4 leaves 0	4 from 8 leaves 4
4 from 5 leaves 1	4 from 9 leaves 5
4 from 6 leaves 2	4 from 10 leaves 6
4 from 7 leaves 3	4 from 11 leaves 7

LESSON V.

In which the Number Five is taken from each Number as far as Ten.

1. Henry has five pears in a basket and gives them all to his sister: how many will be left? Five from five, and what remains?

2. If Henry has six pears in his basket and gives five to John, how many will be left? Five from six, and what remains?

3. If Henry has seven pears in his basket and gives five away, how many will be left? Five from seven, and what remains?

4. If Henry has eight pears in his basket and takes out five, how many will be left? Five from eight, and what remains?

5. If Henry has nine pears in his basket and *James takes* out five, how many will be left? Five *from nine,* and what remains?

6. If Henry has ten pears in his basket and William takes out five, how many will be left? Five from ten, and what remains?

Commit the following Table to memory:—

5 from 5 leaves 0	5 from 8 leaves 3
5 from 6 leaves 1	5 from 9 leaves 4
5 from 7 leaves 2	5 from 10 leaves 5

————

LESSON VI

In which the Number Six is taken from each Number as far as Ten.

1. If James has six squirrels in a cage, and opens it and they all go out, how many will be left? Six from six, and what remains?

2. If James has seven squirrels in a cage and lets six out, how many will be left? Six from seven, and what remains?

3. If James has eight squirrels in a cage and lets out six, how many will be left? Six from eight, and what remains?

4. If James has nine squirrels in a cage and lets out six, how many will be left? Six from nine, and what remains?

5. If James has ten squirrels in a cage and lets out six, how many will be left? Six from ten and *what remains?*

Commit the following Table to memory :—

6 from 6 leaves 0	6 from 9 leaves 3
6 from 7 leaves 1	6 from 10 leaves 4
6 from 8 leaves 2	6 from 11 leaves 5

LESSON VII.

In which the Number Seven is taken from each Number as far as Ten.

1. Mary has seven pins in her pincushion, and takes them all out : how many will be left ? Seven from seven, and what remains ?

2. If Mary has eight pins in her cushion and takes out seven, how many will be left ? Seven from eight, and what remains ?

3. If Mary has nine pins in her cushion and takes out seven, how many will be left ? Seven from nine, and what remains ?

4. If Mary has ten pins in her cushion and takes out seven, how many will be left ? Seven from ten, and what remains ?

Commit the following Table to memory :—

7 from 7 leaves 0	7 from 9 leaves 2
7 from 8 leaves 1	7 from 10 leaves 3

LESSON VIII.

In which the Number Eight is taken from each Number as far as Ten.

1. Reuben has eight plums and gives eight to his playmates: how many will he have left? Eight from eight, and what remains?

2. If Reuben has nine plums and gives eight to John, how many will be left? Eight from nine, and what remains?

3. If Reuben has ten plums and eats eight, how many will be left? Eight from ten, and what remains?

Commit the following Table to memory :—

8 from 8 leaves 0	8 from 10 leaves 2
8 from 9 leaves 1	8 from 11 leaves 3

LESSON IX.

In which the Number Nine is taken from each Number as far as Ten.

1. There are nine chairs in a room and they are all taken out: how many are left? Nine from nine, and what remains?

2. If there are ten chairs and nine are taken out, how many are left? Nine from ten, and what remains?

Commit the following Table to memory :—

9 from 9 leaves 0	9 from 10 leaves 1

LESSON X.

In which the Number Ten is taken from Ten.

If there were ten candles burning, and they should all be put out, how many would still be burning? Ten from ten, and what remains?

Commit the following Table to memory :—

10 from 10 leaves 0	10 from 11 leaves 1

LESSON XI.

Examples in Subtraction.

1. Ten, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

2. Twenty, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

3. Thirty, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

4. Forty, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

5. Fifty, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

LESSON XII.

Examples in Subtraction.

1. Sixty, less one, how many? Sixty, less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

2. Seventy, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? Less nine, how many? Less ten, how many?

3. Eighty, less one, how many? Less two, how many? Less three, how many? Less four, how many? Less five, how many? Less six, how many? Less seven, how many? Less eight, how many? *Less nine, how* many? Less ten, how many?

4. Ninety, less one, how many ? Less two, how many ? Less three, how many ? Less four, how many ? Less five, how many ? Less six, how many ? Less seven, how many ? Less eight, how many ? Less nine, how many ? Less ten, how many ?

5. One hundred, less one, how many ? Less two, how many ? Less three, how many ? Less four, how many ? Less five, how many ? Less six, how many ? Less seven, how many ? Less eight, how many ? Less nine, how many ? Less ten, how many ?

6. There are sixty-five pigeons in a flock, and John fires at them and kills nine : how many are left ?

7. There are fifty-four sheep in a fold, and a wolf breaks in and kills seven : how many are left ?

8. There are forty-nine scholars in a school, and ten of them are girls : how many boys are there ?

9. In another school there are twenty scholars, and nine are boys : how many girls are there ?

10. In Elizabeth's flower-bed there are thirty beautiful lilies, and John breaks off seven of them : how many are left ?

11. James has thirty-seven cents : he spends six for candy, eight for a pencil, and twelve for a penknife : how many has he left ?

LESSON XIII.

Subtraction is to be taught in the same way as Addition, viz. first by indicating the difference between the numbers by means of the common language, (as has already been done,) and then the subtraction is to be made from inspection by the eye.

For the Eye.

1	2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1	1

For the Eye.

2	3	4	5	6	7	8	9	10	11
2	2	2	2	2	2	2	2	2	2

For the Eye.

3	4	5	6	7	8	9	10	11	12
3	3	3	3	3	3	3	3	3	3

For the Eye.

4	5	6	7	8	9	10	11	12	13
4	4	4	4	4	4	4	4	4	4

For the Eye.

5	6	7	8	9	10	11	12	13	14
5	5	5	5	5	5	5	5	5	5

For the Eye.

6	7	8.	9	10	11	12	13	14	15
6	6	6	6	6	6	6	6	6	6

For the Eye.

7	8	9	10	11	12	13	14	15	16
7	7	7	7	7	7	7	7	7	7

				For the Eye.					
8	9	10	11	12	13	14	15	16	17
8	8	8	8.	8	8	8	8	8	8

				For the Eye.					
9	10	11	12	13	14	15	16	17	18
9	9	9	9	9	9	9	9	9	9

LESSON XIV.

We see, from the above examples, that when the lower figure is greater than the one directly over it, we may suppose ten to be added to the upper figure.

If several figures are written by the side of each other, thus—

```
From   648321
Take     3746
       ------
       644575
```

we say, 6 from 11 leaves 5; then we add 1 to the next figure to the left and say, 5 from 12 leaves 7: we then add 1 to the 7 and say, 8 from 13 leaves 5: we then add 1 to the 3 and say, 4 from 8 leaves 4. We then bring down the figures 4 and 6, and find the result to be 644575.

	(1)	(2)	(3)
From	840704	9200762	6191804
Take	71230	4618127	4923709

LESSON XV.

	(1)	(2)	(3)
From	284104	180467	1049761
Take	37093	67092	42167

	(4)	(5)	(6)
From	4967842	2841049	27084874
Take	270482	67814	3727041

	(7)	(8)	(9)
From	84276704	9670912	3607401
Take	7284093	284267	1674198

	(10)	(11)	(12)
From	10972876	91284167	41270412
Take	10897049	80496701	27849555

	(13)	(14)	(15)
From	87412607	670496	3270416
Take	2780416	284155	3030219

	(16)	(17)	(18)
From	67492707	9541098	2741675
Take	24926704	1098755	1270416

	(19)	(20)	(21)
From	8417041	2708416	72840509
Take	2781216	1942704	53047041

	(22)	(23)	(24)
From	81416704	91081210	6784105
Take	27041709	2837949	5550000

LESSON XIV.

1. From one hundred and forty-five take one hundred and fourteen. Set the less number under the greater, and then subtract.

	145
	114
Difference,	31

2. A man bought a horse for sixty-five dollars and a colt for eight dollars : how much more did he give for the horse than for the colt ?

3. A man bought a cow for twenty-five dollars and a calf for six dollars : how much more did he give for the cow than for the calf ?

4. A boy bought forty-six apples ; he gave eight to William, nine to Charles, and four to James : how many has he left ?

5. James has thirty-seven cents ; he buys a pen-knife for eighteen cents, a jews-harp for three cents, and gives seven cents away : how much has he left ?

6. Charles has seventy-five cents ; he pays thirty cents for a pair of mittens, twenty-five cents for a knife, eight cents for a top, and three cents for marbles : how much has he left ?

7. There are sixty-one books in a case ; James takes out five, John eight, Charles seven, and William one : how many are left ?

8. There are one hundred apples in a pile : William takes eighteen, Mary takes ten, Nancy fifteen, and Margaret twelve ; how many are left ?

9. A man owes sixty dollars ; at one time he pays fifteen dollars, at another twelve dollars, at another five dollars, and three dollars at another : *how much* will he still owe ?

LESSON XVII.

Questions in Subtraction.

1. What is Subtraction ?

Subtraction is the process of finding the differ-
ence between two numbers.

2. If the numbers are unequal, what is the larger called ?

The minuend.

3. What is the less number called ?

The subtrahend.

4. What is the difference called ?

The remainder.

5. How are the numbers written down for subtraction ?

The less number is written under the greater, so
that units shall stand under units, tens under tens,
hundreds under hundreds, &c.

6. How do you make the subtraction ?

Begin at the right hand, and subtract each figure
of the subtrahend from the one directly over it.
But if the upper figure is the least, add ten to it,
and then make the subtraction, and add one to the
next left-hand figure of the subtrahend.

**7. If the minuend and subtrahend are equal, which is written
above ?**

Either may then be written in the upper place.

8. What will then be the difference ?

Their difference will then be 0.

SECTION THIRD.

LESSON I.

In which we Multiply by One.

1. If Charles buys an apple for one cent, what does it cost him? Once one is what?

2. If Charles buys two apples, at one cent each, what do they cost him? Once two is what?

3. If Charles buys three apples, at one cent each, what do they cost him? Once three is what?

4. If Charles buys four apples, at one cent each, what do they cost him? Once four is what?

5. If Charles buys five apples, at one cent each, what do they cost him? Once five is what?

6. If Charles buys six apples, at one cent each, what do they cost him? Once six is what?

7. If Charles buys seven apples, at one cent each, what do they cost? Once seven is what?

8. If Charles buys eight apples, at one cent each, what do they cost? Once eight is what?

9. If Charles buys nine apples, at one cent each, what do they cost? Once nine is what?

10. If Charles buys ten apples, at one cent each, what do they cost? Once ten is what?

Commit the following Table to memory :—

Once	1	is	1	Once	6	is	6
Once	2	is	2	Once	7	is	7
Once	3	is	3	Once	8	is	8
Once	4	is	4	Once	9	is	9
Once	5	is	5	Once	10	is	10

LESSON II.

In which we Multiply by Two.

1. If James buys one peach for two cents, what does it cost? Two times one are what?

2. If James buys two peaches, at two cents each, what do they cost? Two times two are what?

3. If James buys three peaches, at two cents each, what do they cost? Two times three are what?

4. If James buys four peaches, at two cents each, what do they cost? Two times four are what?

5. If James buys five peaches, at two cents each, what do they cost? Two times five are what?

6. If James buys six peaches, at two cents each, what do they cost? Two times six are what?

7. If James buys seven peaches, at two cents each, what do they cost? Two times seven are what?

8. If James buys eight peaches, at two cents each, what do they cost? Two times eight are what?

9. If James buys nine peaches, at two cents each, what do they cost? Two times nine are what?

10. If James buys ten peaches, at two cents each, what do they cost? Two times ten are what?

Commit the following Table to memory:—

2	times	1	are	2	2 times 6 are 12
2	times	2	are	4	2 times 7 are 14
2	times	3	are	6	2 times 8 are 16
2	times	4	are	8	2 times 9 are 18
2 times 5 are 10					2 times 10 are 20

LESSON III.

In which we Multiply by Three.

1. If John buys a lemon for three cents, what does it cost? Three times one are what?

2. If John buys two lemons, at three cents each, what do they cost? Three times two are what?

3. If John buys three lemons, at three cents each, what do they cost? Three times three are what?

4. If John buys four lemons, at three cents each, what do they cost? Three times four are what?

5. If John buys five lemons, at three cents each, what do they cost? Three times five are what?

6. If John buys six lemons, at three cents each, what do they cost? Three times six are what?

7. If John buys seven lemons, at three cents each, what do they cost? Three times seven are what?

8. If John buys eight lemons, at three cents each, what do they cost? Three times eight are what?

9. If John buys nine lemons, at three cents each, what do they cost? Three times nine are what?

10. If John buys ten lemons, at three cents each, what do they cost? Three times ten are what?

Commit the following Table to memory :—

3 times 1 are 3		3 times 6 are 18	
3 times 2 are 6		3 times 7 are 21	
3 times 3 are 9		3 times 8 are 24	
3 times 4 are 12		3 times 9 are 27	
3 times 5 are 15		3 times 10 are 30	

LESSON IV.

In which we Multiply by Four.

1. If Henry buys one orange for four cents, what does it cost ? Four times one are what ?

2. If Henry buys two oranges, at four cents each, what do they cost ? Four times two are what ?

3. If Henry buys three oranges, at four cents each, what do they cost ? Four times three are what ?

4. If Henry buys four oranges, at four cents each, what do they cost ? Four times four are what ?

5. If Henry buys five oranges, at four cents each, what do they cost ? Four times five are what ?

6. If Henry buys six oranges, at four cents each, what do they cost ? Four times six are what ?

7. If Henry buys seven oranges, at four cents each, what do they cost ? Four times seven are what ?

8. If Henry buys eight oranges, at four cents each, what do they cost ? Four times eight are what ?

9. If Henry buys nine oranges, at four cents each, what do they cost ? Four times nine are what ?

10. If Henry buys ten oranges, at four cents each, what do they cost ? Four times ten are what ?

Commit the following Table to memory :—

4 times	1	are	4	4 times 6 are 24
4 times	2	are	8	4 times 7 are 28
4 times	3	are	12	4 times 8 are 32
4 times	4	are	16	4 times 9 are 36
4 times	*5*	*are*	*20*	4 times 10 are 40

LESSON V.

In which we Multiply by Five.

1. If William gives five cents for a top, what does it cost? Five times one are what?

2. If William buys two tops, at five cents each, what do they cost him? Five times two are what?

3. If William buys three tops, at five cents each, what do they cost? Five times three are what?

4. If William buys four tops, at five cents each, what do they cost? Five times four are what?

5. If William buys five tops, at five cents each, what do they cost? Five times five are what?

6. If William buys six tops, at five cents each, what do they cost? Five times six are what?

7. If William buys seven tops, at five cents each, what do they cost? Five times seven are what?

8. If William buys eight tops, at five cents each, what do they cost? Five times eight are what?

9. If William buys nine tops, at five cents each, what do they cost? Five times nine are what?

10. If William buys ten tops, at five cents each, what do they cost? Five times ten are what?

Commit the following Table to memory :—

5	times	1	are	5	
5	times	2	are	10	
5	times	3	are	15	
5	times	4	are	20	
5	times	5	are	25	

5	times	6	are	30	
5	times	7	are	35	
5	times	8	are	40	
5	times	9	are	45	
5	times	10	are	50	

LESSON VI.

In which we Multiply by Six.

1. If Jared buys one sheet of drawing-paper for six cents, what does it cost him? Six times one are what?

2. If Jared buys two sheets, at six cents each, what do they cost? Six times two are what?

3. If Jared buys three sheets, at six cents each, what do they cost? Six times three are what?

4. If Jared buys four sheets, at six cents each, what do they cost? Six times four are what?

5. If Jared buys five sheets, at six cents each, what do they cost? Six times five are what?

6. If Jared buys six sheets, at six cents each, what do they cost? Six times six are what?

7. If Jared buys seven sheets, at six cents each, what do they cost? Six times seven are what?

8. If Jared buys eight sheets, at six cents each, what do they cost? Six times eight are what?

9. If Jared buys nine sheets, at six cents each, what do they cost? Six times nine are what?

10. If Jared buys ten sheets, at six cents each, what do they cost? Six times ten are what?

Commit the following Table to memory :—

6 times 1 are 6		6 times 6 are 36
6 times 2 are 12		6 times 7 are 42
6 times 3 are 18		6 times 8 are 48
6 times 4 are 24		6 times 9 are 54
6 *times 5* are 30		6 times 10 are 60

LESSON VII.

In which we Multiply by Seven.

1. If Jane buys a thimble for seven cents, what does it cost? Seven times one are what?

2. If Jane buys two thimbles, at sevens cents each what do they cost? Seven times two are what?

3. If Jane buys three thimbles, at seven cents each what do they cost? Seven times three are what?

4. If Jane buys four thimbles, at seven cents each what do they cost? Seven times four are what?

5. If Jane buys five thimbles, at seven cents each what do they cost? Seven times five are what?

6. If Jane buys six thimbles, at seven cents each what do they cost? Seven times six are what?

7. If Jane buys seven thimbles, at seven cent each, what do they cost? Seven times seven are what?

8. If Jane buys eight thimbles, at seven cents each what do they cost? Seven times eight are what?

9. If Jane buys nine thimbles, at seven cents each what do they cost? Seven times nine are what?

10. If Jane buys ten thimbles, at seven cents each what do they cost? Seven times ten are what?

Commit the following Table to memory :—

7 times 1 are 7			7 times 6 are 42		
7 times 2 are 14			7 times 7 are 49		
7 times 3 are 21			7 times 8 are 56		
7 times 4 are 28			7 times 9 are 63		
7 times 5 are 35			7 times 10 are 70		

LESSON VIII.

In which we Multiply by Eight.

1. If Peter buys an inkstand for eight cents, what does it cost him? Eight times one are what?

2. If Peter buys two inkstands, at eight cents each, what do they cost? Eight times two are what?

3. If Peter buys three inkstands, at eight cents each, what do they cost? Eight times three are what?

4. If Peter buys four inkstands, at eight cents each, what do they cost? Eight times four are what?

5. If Peter buys five inkstands, at eight cents each, what do they cost? Eight times five are what?

6. If Peter buys six inkstands, at eight cents each, what do they cost? Eight times six are what?

7. If Peter buys seven inkstands, at eight cents each, what do they cost? Eight times seven are what?

8. If Peter buys eight inkstands, at eight cents each, what do they cost? Eight times eight are what?

9. If Peter buys ten inkstands, at eight cents each, what do they cost? Eight times ten are what?

Commit the following Table to memory:—

8 times 1 are 8		8 times 6 are 48	
8 times 2 are 16		8 times 7 are 56	
8 times 3 are 24		8 times 8 are 64	
8 times 4 are 32		8 times 9 are 72	
8 times 5 are 40		8 times 10 are 80	

LESSON XI.

In what we Multiply by Nine.

1. If Henry gives nine cents for a box, what does it cost him? Nine times one are what?

2. If Henry buys two boxes, at nine cents each, what do they cost? Nine times two are what?

3. If Henry buys three boxes, at nine cents each, what do they cost? Nine times three are what?

4. If Henry buys four boxes, at nine cents each, what do they cost? Nine times four are what?

5. If Henry buys five boxes, at nine cents each, what do they cost? Nine times five are what?

6. If Henry buys six boxes, at nine cents each, what do they cost? Nine times six are what?

7. If Henry buys seven boxes, at nine cents each, what do they cost? Nine times seven are what?

8. If Henry buys eight boxes, at nine cents each, what do they cost? Nine times eight are what?

9. If Henry buys nine boxes, at nine cents each, what do they cost? Nine times nine are what?

10. If Henry buys ten boxes, at nine cents each, what do they cost? Nine times ten are what?

Commit the following Table to memory:—

9 times 1 are 9		9 times 6 are 54
9 times 2 are 18		9 times 7 are 63
9 times 3 are 27		9 times 8 are 72
9 times 4 are 36		9 times 9 are 81
9 times 5 are 45		9 times 10 are 90

LESSON X.

In which we Multiply by Ten.

1. If Oliver gives ten cents for a knive, what does it cost? Ten times one are what?

2. If Oliver buys two knives, at ten cents each, what do they cost? Ten times two are what?

3. If Oliver buys three knives, at ten cents each, what do they cost? Ten times three are what?

4. If Oliver buys four knives, at ten cents each, what do they cost? Ten times four are what?

5. If Oliver buys five knives, at ten cents each, what do they cost? Ten times five are what?

6. If Oliver buys six knives, at ten cents each, what do they cost? Ten times six are what?

7. If Oliver buys seven knives, at ten cents each, what do they cost? Ten times seven are what?

8. If Oliver buys eight knives, at ten cents each, what do they cost? Ten times eight are what?

9. If Oliver buys nine knives, at ten cents each, what do they cost? Ten times nine are what?

10. If Oliver buys ten knives, at ten cents each, what do they cost? Ten times ten are what?

Commit the following Table to memory:—

10 times 1 are 10	10 times 6 are 60
10 times 2 are 20	10 times 7 are 70
10 times 3 are 30	10 times 8 are 80
10 times 4 are 40	10 times 9 are 90
10 times 5 are 50	10 times 10 are 100

LESSON XI,

In which we Multiply by Eleven.

· 1. If Stephen gives eleven cents for a top, what does it cost him? Eleven times one are what?

2. If Stephen buys two tops, at eleven cents each, what do they cost him? Eleven times two are what?

3. If Stephen buys three tops, at eleven cents each, what do they cost him? Eleven times three are what?

4. If Stephen buys four tops, at eleven cents each, what do they cost him? Eleven times four are what?

5. If Stephen buys five tops, at eleven cents each, what do they cost him? Eleven times five are what?

6. If Stephen buys seven tops, at eleven cents each, what do they cost him? Eleven times seven are what?

7. If Stephen buys nine tops, at eleven cents each, what do they cost him? Eleven times nine are what?

Commit the following Table to memory:—

11 times 1 are 11			11 times 7 are 77		
11 times 2 are 22			11 times 8 are 88		
11 times 3 are 33			11 times 9 are 99		
11 times 4 are 44			11 times 10 are 110		
11 times 5 are 55			11 times 11 are 121		
11 times 6 are 66			11 times 12 are 132		

LESSON XII.

In which we Multiply by Twelve.

1. If Richard gives twelve cents for a knife, what does it cost him? Twelve times one are how many?

2. If Richard buys two knives, at twelve cents each, how much do they cost him? Twelve times two are how many?

3. If Richard buys three knives, at twelve cents each, how much do they cost him? Twelve times three are how many?

4. If Richard buys four knives, at twelve cents each, what do they cost him? Twelve times four are how many?

5. If Richard buys five knives, at twelve cents each, what do they cost him? Twelve times five are how many?

6. If Richard buys six knives, at twelve cents each, what do they cost him? Twelve times six are how many?

7. If Richard buys seven knives, at twelve cents each, what do they cost him? Twelve times seven are how many?

Commit the following Table to memory:—

12 times 1 are 12	12 times 7 are 84
12 times 2 are 24	12 times 8 are 96
12 times 3 are 36	12 times 9 are 108
12 times 4 are 48	12 times 10 are 120
12 times 5 are 60	12 times 11 are 132
12 times 6 are 72	12 times 12 are 144

LESSON XIII.

Questions in Multiplication.

1. What will eight apples cost, at one cent apiece?

2. What will six oranges cost, at four cents apiece?

3. What will six lemons cost, at three cents apiece?

4. What will eight quills cost, at two cents apiece?

5. What will six spelling-books cost, at twelve cents each?

6. What will ten sticks of candy cost, at two cents each?

7. A farmer bought nine sheep, at three dollars apiece: what did they cost?

8. A farmer bought two cows, at twenty dollars apiece: what did they both cost?

9. Mary has three rosebushes, and nine buds on each: how many buds on all?

10. If beef is nine cents a pound, what will be the cost of nine pounds?

11. If John can ride nine miles in one hour, how far can he ride in eight hours?

12. If Charles gives four cents for a yard of tape, how much must he pay for seven yards?

13. If Robert pays six cents for a top, how much must he pay for nine tops?

14. If a pound of sugar costs nine cents, what will seven pounds cost?

15. If one thimble costs seven cents, what will eight thimbles cost?

16. If one orange costs five cents, what will nine cost?

LESSON XIV.

Questions in Multiplication.

1. One is how many times one ?   Once one.

2. Two are how many times one ? Two times one.

3. Three are how many times one ? Three times.

4. Four are how many times one ?   How many times two ?

5. Five are how many times one ?   Five times one.

6. Six are how many times one ?   How many times two ?   How many times three ?

7. Seven are how many times one ? Seven times.

8. Eight are how many times one ?   How many times two ?   How many times three ?   How many times four ?

9. Nine are how many times one ?   How many times three ?

10. Ten are how many times one ?   How many times two ?   How many times five ?

11. Eleven are how many times one ? Eleven times.

12. Twelve are how many times one ? How many times two ?   How many times three ? . How many times four ?   How many times six ?

13. Thirteen are how many times one ?

14. Fourteen are how many times one ?   How many times two ?   How many times seven ?

15. Fifteen are how many times one ?   How many times three ?   How many times five ?

16. *Sixteen are* how many times one? How *many times two ?* How many times four ? How *many times eight ?*

17. Seventeen are how many times one ?

18. Eighteen are how many times one ? How many times two ? How many times three ? How many times six ? How many times nine ?

19. Nineteen are how many times one ?

20. Twenty are how many times one ? How many times two ? How many times four ? How many times five ? How many times ten ?

LESSON XV.

Questions in Multiplication.

21. Twenty-one are how many times one ? How many times three ? How many times seven ?

22. Twenty-two are how many times one ? How many times two ? How many times eleven ?

23. Twenty-three are how many times one ?

24. Twenty-four are how many times one ? How many times two ? How many times three ? How many times four ? How many times six ? How many times eight ? How many times twelve ?

25. Twenty-five are how many times one ? How many times five ?

26. Twenty-six are how many times one ? How many times two ? How many times thirteen ?

27. Twenty-seven are how many times one ? How many times three ? How many times nine ?

28. Twenty-eight are how many times one ? How many times two ? How many times four ? How many times seven ? How many times fourteen ?

29. Twenty-nine are how many times one?

30. Thirty are how many times one? How many times two? How many times three? How many times five? How many times six? How many times ten?

31. Thirty-one are how many times one?

32. Thirty-two are how many times one? How many times two? How many times four? How many times eight? How many times sixteen?

33. Thirty-three are how many times one?

34. Thirty-four are how many times one? How many times two? How many times seventeen?

35. Thirty-five are how many times one? How many times five? How many times seven?

LESSON XVI.

Questions on Multiplication.

36. Thirty-six are how many times one? How many times two? How many times three? How many times four? How many times six? How many times nine? How many times eighteen?

39. Thirty-nine are how many times one?

40. Forty are how many times one? How many times two? How many times four? How many times five? How many times eight? How many times ten? How many times twenty?

41. Forty-one are how many times one?

42. *Forty-two* are how many times one? How many times two? How many times three? How

many times six ? How many times seven ? How many times fourteen ? How many times twenty-one ?

43. Forty-three are how many times one ?

44. Forty-four are how many times one ? How many times two ? How many times four ? How many times eleven ? How many times twenty-two ?

45. Forty-five are how many times one ? How many times three ? How many times five ? How many times nine ? How many times fifteen ?

46. Forty-six are how many times one ? How many times two ? How many times twenty-three ?

47. Forty-seven are how many times one ?

48. Forty-eight are how many times one ? How many times two ? How many times three ? How many times four ? How many times six ? How many times eight ? How many times twelve ? How many times sixteen ? How many times twenty-four ?

49. Forty-nine are how many times one ? How many times seven ?

50. Fifty are how many times one ? How many times two ? How many times five ? How many times ten ? How many times twenty-five ?

60. Sixty are how many times ten ? How many times six ? How many times twenty ? How many times fifteen ?

80. Eighty are how many times eight ? How many times ten ? How many times twenty ? How many times forty ?

100. One hundred are how many times ten ? How many times twenty ? How many times fifty ?

LESSON XVII.

Questions on Multiplication.

1. Twenty-two are how many times eleven? Twenty-four are how many times twelve? Thirty-five are how many times eleven, and how many over? Thirty-eight are how many times twelve, and how many over?

2. Forty are how many times eleven, and how many over? How many times twelve, and how many over? Forty-eight are how many times eleven, and how many over? How many times twelve? Fifty-five are how many times eleven? How many times twelve, and how many over? Fifty-nine are how many times eleven, and how many over? How many times twelve, and how many over?

3. Sixty are how many times eleven, and how many over? How many times twelve, and how many over? Sixty-six are how many times eleven? How many times twelve, and how many over? Seventy-two are how many times eleven, and how many over? How many times twelve, and how many over?

4. Eighty are how many times eleven, and how many over? How many times twelve, and how many over? Eighty-four are how many times eleven, and how many over? How many times twelve? Eighty-seven are how many times eleven, and how many over? How many times twelve, and how many over?

5. Ninety are how many times eleven, and how many over? How many times twelve, and how many over? Ninety-six are how many times eleven, and how many over? How many times twelve, and how many over?

LESSON XVIII.

Questions on Multiplication.

1. One hundred are how many times eleven, and how many times twelve, and how many over? One hundred and eight are how many times eleven, and how many over? How many times twelve, and how many over?

2. One hundred and thirty are how many times eleven, and how many over? How many times twelve, and how many over? One hundred and thirty-one are how many times eleven, and how many over? How many times twelve, and how many over?

3. One hundred and forty are how many times eleven, and how many over? How many times twelve, and how many over?

MULTIPLICATION TABLE.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

LESSON XIX.

THE multiplication table is to be learned by the eye, in the same manner as the tables of addition and subtraction; that is, let the teacher point to the two figures that are to be multiplied together, and require the pupil to pronounce the result.

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
1	1	1	1	1	1	1	1	1	1	1	1

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
2	2	2	2	2	2	2	2	2	2	2	2

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
3	3	3	3	3	3	3	3	3	3	3	3

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
4	4	4	4	4	4	4	4	4	4	4	4

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
5	5	5	5	5	5	5	5	5	5	5	5

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
6	6	6	6	6	6	6	6	6	6	6	6

For the Eye.

12	11	10	9	8	7	6	5	4	3	2	1
7	7	7	7	7	7	7	7	7	7	7	7

			For the Eye.								
12	11	10	9	8	7	6	5	4	3	2	1
8	8	8	8	8	8	8	8	8	8	8	8

			For the Eye.								
12	11	10	9	8	7	6	5	4	3	2	1
9	9	9	9	9	9	9	9	9	9	9	9

			For the Eye.								
12	11	10	9	8	7	6	5	4	3	2	1
10	10	10	10	10	10	10	10	10	10	10	10

			For the Eye.								
12	11	10	9	8	7	6	5	4	3	2	1
11	11	11	11	11	11	11	11	11	11	11	11

			For the Eye.								
12	11	10	9	8	7	6	5	4	3	2	1
12	12	12	12	12	12	12	12	12	12	12	12

LESSON XX.

1. What is Multiplication ?

Multiplication is the process of taking one number as many times as there are units in another.

2. What is the number to be taken called ?

The multiplicand.

3. What is the number called which denotes how many times the multiplicand is to be taken ?

The multiplier.

4. What are the multiplier and multiplicand taken together called ?

The factors; or simply, factors.

5. What is the result of the multiplication called ?

The product.

6. If the multiplier is 1, what will the product be ?

The same as the multiplicand.

LESSON XXI.

Examples in Multiplication.

In each of the following examples the pupil should be taught to pronounce the result immediately, without using or repeating any of the intermediate words.

(1)	(2)	(3)
1203123	1232012	12012210
2	3	4

(4)	(5)	(6)
12340421	14130621	254012641
5	6	7

(7)	(8)	(9)
410421302	412604321	270412062
6	7	8

(10)	(11)	(12)
87046704	670412704	412672048
9	8	7

(13)	(14)	(15)
4974051	72041261	4127041236
10	11	12

(16)	(17)	(18)
87534564	38976435	538705689
9	10	8

LESSON XXII.

1. What is the product of 278904 by 2 ?
                        Ans. 557808.

2. What is the product of 678741 by 3 ?
                        Ans. 2036223.

3. What is the product of 3021945 by 4 ?
                        Ans. 12087780.

4. What is the product of 28432 by 8 ?
                        Ans. 227456.

5. What is the product of 82798 by 9 ?
                        Ans. 745182.

6. What is the product of 6789 by 11 ?
                        Ans. 74679.

7. What is the product of 49604 by 12 ?
                        Ans. 595248.

8. What is the product of 365 by 84 ?
                        Ans. 30660.

9. What is the product of 37864 by 209 ?
                        Ans. 7913576.

10. What is the product of 576784 by 64 ?
                        Ans. 36914176.

11. What is the product of 596875 by 144 ?
                        Ans. 85950000.

12. What is the product of 675 by 10 ?
                        Ans. 6750.

13. What is the product of 7859 by 100 ?
                        Ans. ——

LESSON XXIII.

1. What is the product of 8797 by 1000 ?
   Ans. ——

2. What is the product of 97672 by 10 ?
   Ans. ——   .

3. What is the product of 6498 by 100 ?
   Ans. ——

4. What is the product of 8141 by 100000 ?
   Ans. ——

5. What is the product of 296200 by 875000 ?
   Ans. 259175000000.

6. What is the product of 359260 by 304000 ?·
   Ans. 109215040000.

7. What is the product of 4871000 by 270000 ?
   Ans. 1315170000000.

8. What is the product of 21200 by 70 ?
   Ans. 1484000.

9. What is the product of 209402 by 72 ?
   Ans. 15076944.

10. What is the product of 86972 by 1208 ?
    Ans. 105062176.

11. What is the product of 47042 by 91 ?
    Ans. 4280822.

12. What is the product of 34293 by 74 ?
    Ans. 2537682.

13. What is the product of 50406 by 8050 ?
    Ans. 405768300.

SECTION FOURTH.

LESSON I.

In which we Divide by Two.

1. How many two's are there in two? Two are contained in two, how many times?

2. How many two's are there in four? Two in four, how many times?

3. How many two's are there in six? Two in six, how many times?

4. How many two's are there in eight? Two in eight, how many times?

5. How many two's are there in ten? Two in ten, how many times?

6. How many two's are there in twelve? Two in twelve, how many times?

7. How many two's are there in fourteen? Two in fourteen, how many times?

8. How many two's are there in sixteen? Two in sixteen, how many times?

9. How many two's are there in eighteen? Two in eighteen, how many times?

10. How many two's are there in twenty? Two in twenty, how many times?

Commit the following Table to memory :—

2 in	2	once	2 in 12	six times
2 in	4	two times	2 in 14	seven times
2 in	6	three times	2 in 16	eight times
2 in	8	four times	2 in 18	nine times
2 in	*10*	*five times*	2 in 20	ten times.

LESSON II.

Examples in the last Lesson.

1. William has eight apples, and divides them equally between two boys: how many does he give to each?

2. James has twelve peaches, and divides them equally between his two sisters: how many does he give to each?

3. Charles has a basket containing twenty pears, and divides them equally between his father and mother: how many does he give to each?

4. A father bought twenty-eight fish-hooks, and divided them between John and Charles: how many had each?

5. A mother has a dozen needles, and gives an equal number to Jane and Mary: how many will each have?

6. A lady having two parlors, bought twenty-four chairs, and put an equal number in each room: how many were there in each room?

7. If she had bought twenty-two chairs, how many would there have been in each room?

8. If she had bought eighteen chairs, how many would there have been in each room?

9. There are sixteen boys in a schoolroom, and but two benches: how many boys must sit on each bench?

10. If there were twenty-four boys, how many would sit on a bench?

11. How many peaches, at two cents apiece, can *you buy for eighteen* cents?

LESSON III.

In which we Divide by Three.

1. How many three's are there in three ? Th
are contained in three, how many times ?

2. How many three's are there in six ? Thre
six, how many times ?

3. How many three's are there in nine ? Th
in nine, how many ?

4. How many three's are there in twelve ? Th
in twelve, how many ?

5. How many three's are there in fifteen ? Th
in fifteen, how many times ?

6. How many three's are there in eighteen ? Th
in eighteen, how many times ?

7. How many three's are there in twenty-o:
Three in twenty-one, how many times ?

8. How many three's are there in twenty-fo
Three in twenty-four, how many times ?

9. How many three's are there in twenty-sev
Three in twenty-seven, how many times ?

Commit the following Table to memory :—

3 in 3 once	3 in 18 six times
3 in 6 two times	3 in 21 seven time:
3 in 9 three times	3 in 24 eight time:
3 in 12 four times	3 in 27 nine times
3 in 15 five times	3 in 30 ten times.

LESSON IV.
Examples in the last Lesson.

1. A father buys three penknives, and divides them equally between his three sons: how many does he give to each?

2. At three cents apiece, how many oranges can you buy for nine cents?

3. How many can you buy for twelve cents?

4. How many can you buy for thirty cents?

5. How many can you buy for twenty-eight cents?

6. A boy has twelve cents, and finds that he must give three cents apiece for tops: how many can he buy?

7. If he has twenty-one cents, how many can he buy?

8. If he has twenty-four cents, how many can he buy?

9. There are fifteen girls in a school, and three benches: how many must sit on each bench?

10. If there were eighteen girls in the school, how many would have to sit on each bench?

11. If there were twenty-four, how many would have to sit on each bench?

12. If there were thirty, how many would have to sit on each bench?

13. If you write three lines every day, how many days will it take to write twenty-seven lines?

14. How many days will it take to write twenty-one lines?

15. How many days will it take to write twenty-four lines?

16. How many days to write fifteen lines?

LESSON V.

In which we Divide by Four.

1. How many four's are there in four? Four are contained in four, how many times?

2. How many four's are there in eight? Four in eight, how many times?

3. How many four's are there in twelve? Four in twelve, how many times?

4. How many four's are there in sixteen? Four in sixteen, how many times?

5. How many four's are there in twenty? Four in twenty, how many times?

6. How many four's are there in twenty-four? Four in twenty-four, how many times? ·

7. How many four's are there in twenty-eight? Four in twenty-eight, how many times?

8. How many four's are there in thirty-two? Four in thirty-two, how many times?

9. How many four's are there in thirty-six? Four in thirty-six, how many times?

10. How many four's are there in forty? Four in forty, how many times?

Commit the following Table to memory :—

4 in 4 once	4 in 24 six times
4 in 8 two times	4 in 28 seven times
4 in 12 three times	4 in 32 eight times
4 in 16 four times	4 in 36 nine times
4 in 20 five times	4 in 40 ten times.

LESSON VI.

Examples in the last Lesson.

1. If four apples be equally divided between two boys, how many will each have?

2. At four cents apiece, how many oranges can you buy for eight cents?

3. At four cents apiece, how many oranges can you buy for sixteen cents?

4. If it takes four sheets of paper for a book, how many books will twenty sheets make?

5. How many will twenty-eight sheets make?

6. How many will thirty-two sheets make?

7. How many will thirty-six sheets make?

8. How many will forty sheets make?

9. There are four benches in a schoolroom, and twenty scholars: how many must sit on each bench?

10. If there be twenty-four scholars, how many must sit on each bench?

11. If there be thirty-two scholars, how many must sit on each bench?

12. If there be thirty-six scholars, how many must sit on each bench?

13. If John pays four cents for one top, how many tops will he buy for twelve cents?

14. How many will he buy for sixteen cents?

15. How many will he buy for twenty cents?

16. How many will he buy for twenty-eight cents?

17. How many will he buy for forty cents?

18. If Charles gives four cents a quart for chesnuts, how many will he buy for eight cents?

19. *How many for sixteen cents?*

20. *How many for thirty-six cents?*

LESSON VII.

In which we Divide by Five.

1. How many five's are there in five? Five are contained in five, how many times?

2. How many five's are there in ten? Five in ten, how many times?

3. How many five's are there in fifteen? Five in fifteen, how many times?

4. How many five's are there in twenty? Five in twenty, how many times?

5. How many five's are there in twenty-five? Five in twenty-five, how many times?

6. How many five's are there in thirty? Five in thirty, how many times?

7. How many five's are there in thirty-five? Five in thirty-five, how many times?

8. How many five's are there in forty? Five in forty, how many times?

9. How many five's are there in forty-five? Five in forty-five, how many times?

10. How many five's are there in fifty? Five in fifty, how many times?

Commit the following Table to memory:—

5 in 5 once	5 in 30 six times
5 in 10 two times	5 in 35 seven times
5 in 15 three times	5 in 40 eight times
5 in 20 four times	5 in 45 nine times
5 in 25 five times	5 in 50 ten times.

LESSON VIII.

Examples in the last Lesson.

1. In a schoolhouse there are five benches and twenty scholars: how many must sit on a bench?

2. If there are twenty-five scholars, how many must sit on a bench?

3. If there are thirty, how many would there sit on a bench?

4. If cloth is five dollars a yard, how many yards can be purchased for ten dollars?

5. How much can be purchased for twenty dollars?

6. How many yards can be purchased for thirty dollars?

7. How many yards can be purchased for forty dollars?

8. How many yards can be purchased for fifty dollars?

9. If flour is five dollars a barrel, how many barrels can be purchased for fifteen dollars?

10. How many barrels can be purchased for twenty dollars?

11. How many barrels for twenty-five dollars?

12. How many barrels for thirty dollars?

13. If tape is five cents a bunch, how many bunches can be bought for twenty cents?

14. How many bunches can be bought for fifty cents?

15. How many bunches can be bought for forty-five cents?

16. If five sheets of paper make a copy-book, how many books will twenty sheets make?

17. How many books will thirty sheets make?

LESSON IX.

In which we Divide by Six.

1. How many sixes are there in six? Six are contained in six, how many times?

2. How many sixes are there in twelve? Six in twelve, how many times?

3. How many sixes in eighteen? Six in eighteen, how many times?

4. How many sixes in twenty-four? Six in twenty-four, how many times?

5. How many sixes in thirty? Six in thirty, how many times?

6. How many sixes in thirty-six? Six in thirty-six, how many times?

7. How many sixes in forty-two? Six in forty-two, how many times?

8. How many sixes in forty-eight? Six in forty-eight, how many times?

9. How many sixes in fifty-four? Six in fifty-four, how many times?

10. How many sixes in sixty? Six in sixty, how many times?

Commit the following Table to memory :—

6 in 6	once	6 in 36	six times
6 in 12	two times	6 in 42	seven times
6 in 18	three times	6 in 48	eight times
6 in 24	four times	6 in 54	nine times
6 in 30	five times	6 in 60	ten times.

LESSON X.

Examples in the last Lesson.

1. If six sheets of paper make a copy-book, how many books will twelve sheets make?

2. How many books will twenty-four sheets make?

3. How many books will thirty sheets make?

4. How many books will forty-eight sheets make?

5. How many books will sixty sheets make?

6. If one yard of broadcloth costs six dollars, how many yards can be bought for thirty dollars?

7. How many yards can be bought for thirty-six dollars?

8. How many yards for forty-two dollars?

9. How many yards for fifty-four dollars?

10. How many for sixty dollars?

11. If a man travels six miles in one hour, how many hours will it take him to travel twelve miles?

12. How many hours will it take him to travel twenty-four miles?

13. How long will it take him to travel thirty miles?

14. How long to travel fifty-four miles?

15. How long to travel sixty miles?

16. Forty-two apples are divided equally among six boys: how many does each one receive?

17. If fifty-four peaches be divided equally between six boys, how many will each receive?

18. If a yard of ribbon costs six cents, how many yards can be bought for twenty-four cents?

19. How many for thirty cents?

LESSON XI.

In which we Divide by Seven.

1. How many sevens are there in seven? Seven are contained in seven, how many times?

2. How many sevens are there in fourteen? Seven in fourteen, how many times?

3. How many sevens are there in twenty-one? Seven in twenty-one, how many times?

4. How many sevens are there in twenty-eight? Seven in twenty-eight, how many times?

5. How many sevens are there in thirty-five? Seven in thirty-five, how many times?

6. How many sevens are there in forty-two? Seven in forty-two, how many times?

7. How many sevens are there in forty-nine? Seven in forty-nine, how many times?

8. How many sevens are there in fifty-six? Seven in fifty-six, how many times?

9. How many sevens are there in sixty-three? Seven in sixty-three, how many times?

10. How many sevens are there in seventy? Seven in seventy, how many times?

Commit the following Table to memory:—

7 in 7 once		7 in 42 six times
7 in 14 two times		7 in 49 seven times
7 in 21 three times		7 in 56 eight times
7 in 28 four times		7 in 63 nine times
7 in 35 five times		7 in 70 ten times.

LESSON XII.

Examples in the last Lesson.

1. If a man earns seven dollars in one week, how many weeks would it take him to earn thirty-five dollars ?

2. How many weeks to earn fifty-six dollars ?

3. How many weeks to earn sixty-three dollars ?

4. How many weeks to earn seventy dollars ?

5. If you wish to pack seventy pounds of butter in seven boxes, how much would you put in each box ?

6. If you pack but forty-two pounds, how much would you put in each box ?

7. If you pack fifty-six pounds, how much in a box ?

8. If you pack thirty-five pounds, how much in a box ?

9. If you pack twenty-eight pounds, how much in a box ?

10. If you pack but fourteen pounds, how much in a box ?

11. A man agrees to pay seven cents a mile for riding in a stage-coach; at the end of the route he pays seventy cents : how many miles did he ride ?

12. If he had paid twenty-one cents, how far would he have rode ?

13. If he had paid thirty-five cents, how far would he have rode ?

14. If he had paid fifty-six cents, how far would he have rode ?

15. If he had paid forty-two cents, how far would he have rode ?

16. If he had paid sixty-three cents, how far ?

131601

LESSON XIII.

In which we Divide by Eight.

1. How many eights are there in eight? Eight are contained in eight, how many times?

2. How many eights are there in sixteen? Eight in sixteen, how many times?

3. How many eights are there in twenty-four? Eight in twenty-four, how many times?

4. How many eights are there in thirty-two? Eight in thirty-two, how many times?

5. How many eights are there in forty? Eight in forty, how many times? ·

6. How many eights are there in forty-eight? Eight in forty-eight, how many times?

7. How many eights are there in fifty-six? Eight in fifty-six, how many times?

8. How many eights are there in sixty-four? Eight in sixty-four, how many times?

9. How many eights are there in seventy-two? Eight in seventy-two, how many times?

10. How many eights are there in eighty? Eight in eighty, how many times?

Commit the following Table to memory :—

8 in	8	once	8 in 48	six times
8 in 16	two times		8 in 56	seven times
8 in 24	three times		8 in 64	eight times
8 in 32	four times		8 in 72	nine times
8 in 40	*five times*		8 in 80	ten times.

LESSON XIV.

Examples in the last Lesson.

1. If a yard of broadcloth costs eight dollars, how many yards can you buy for sixteen dollars?

2. How many yards can you buy for sixty-four dollars?

3. How many yards can you buy for fifty-six dollars?

4. How many yards can you buy for eighty dollars?

5. How many yards can you buy for forty-eight dollars?

6. How many yards can you buy for twenty-four dollars?

7. How many yards can you buy for seventy-two dollars?

8. If Mary gives eight cents for a bunch of tape, how many bunches can she buy for sixteen cents?

9. How many can she buy for thirty-two cents?

10. How many can she buy for fifty-six cents?

11. How many can she buy for sixty-four cents?

12. How many can she buy for eighty cents?

13. How many can she buy for seventy-two cents?

14. How many can she buy for twenty-four cents?

15. If James pays eight cents for a top, how many tops can he buy for thirty-two cents?

16. How many can he buy for seventy-two cents?

17. How many can he buy for fifty-six cents?

18. How many can he buy for forty-eight cents?

19. How many can he buy for twenty-four cents?

LESSON XV.

In which we Divide by Nine.

1. How many nines are there in nine ?   Nine in nine, how many times ?

2. How many nines are there in eighteen ?   Nine in eighteen, how many times ?

3. How many nines are there in twenty-seven ? ·Nine in twenty-seven, how many times ?

4. How many nines are there in thirty-six ? Nine in thirty-six, how many times ?

5. How many nines are there in forty-five ? Nine in forty-five, how many times ?

6. How many nines are there in fifty-four ?   Nine in fifty-four, how many times ?

7. How many nines are there in sixty-three ? Nine in sixty-three, how many times ?

8. How many nines are there in seventy-two ? Nine in seventy-two, how many times ?

9. How many nines are there in eighty-one ? Nine in eighty-one, how many times ?

10. How many nines are there in ninety ?   Nine in ninety, how many times ?

Commit the following Table to memory :—

9 in 9 once	9 in 54 six times
9 in 18 two times	9 in 63 seven times
9 in 27 three times	9 in 72 eight times
9 in 36 four times	9 in 81 nine times
9 in 45 five times	9 in 90 ten times.

LESSON XVI.

Examples in the last Lesson.

1. If one yard of cotton cloth costs nine cents, how many yards can be bought for twenty-seven cents?

2. How many yards can be bought for fifty-four cents?

3. How many yards can be bought for seventy-two cents?

4. How many yards can be bought for eighty-one cents?

5. How many yards could be bought for ninety cents?

6. If James pays nine cents for a pencil, how many pencils could he buy for twenty-seven cents?

7. How many could he buy for thirty-six cents?

8. How many could he buy for sixty-three cents?

9. How many could he buy for seventy-two cents?

10. If Mary pays nine cents for a slate, how many slates could she buy for forty-five cents?

11. How many could she buy for eighty-one cents?

12. How many could she buy for ninety cents?

13. How many could she buy for forty-five cents?

14. How many could she buy for twenty-seven cents?

15. If a yard of broadcloth costs nine dollars, how many yards can be bought for thirty-six dollars?

16. How many can be bought for forty-five dollars?

17. How many can be bought for eighty-one dollars?

18. How many can be bought for ninety dollars?

LESSON XVII.

In which we Divide by Ten.

1. How many tens are there in ten? Ten are contained in ten, how many times?

2. How many tens are there in twenty? Ten in twenty, how many times?

3. How many tens are there in thirty? Ten in thirty, how many times? ☞

4. How many tens are there in forty? Ten in forty, how many times?

5. How many tens are there in fifty? Ten in fifty, how many times?

6. How many tens are there in sixty? Ten in sixty, how many times?

7. How many tens are there in seventy? Ten in seventy, how many times?

8. How many tens are there in eighty? Ten in eighty, how many times?

9. How many tens are there in ninety? Ten in ninety, how many times?

10. How many tens are there in one hundred? Ten in one hundred, how many times?

Commit the following Table to memory :—

10 in 10 once	10 in 60 six times
10 in 20 two times	10 in 70 seven times
10 in 30 three times	10 in 80 eight times
10 in 40 four times	10 in 90 nine times
10 in 50 five times	10 in 100 ten times.

LESSON XVIII.

Examples in the last Lesson.

1. In an orchard there are twenty trees in rows, and ten trees in each row : how many rows are there?

2. If there were thirty, how many rows would there be?

3. If there were fifty trees, how many rows would there be?

4. If there were seventy trees, how many rows would there be?

5. If there were ninety trees, how many rows would there be?

6. If there were eighty trees, how many rows would there be?

7. A merchant bought flour at ten dollars a barrel; he laid out ninety dollars: how many barrels did he buy?

8. If he had laid out one hundred dollars, how many barrels would he have bought?

9. If he had laid out twenty dollars, how many barrels would he have bought?

10. If he had laid out sixty dollars, how many barrels would he have bought?

11. If he had laid out eighty dollars, how many barrels would he have bought?

12. A teacher paid one dollar for premiums, at ten cents apiece: how many did he buy?

13. How many could he have bought for ninety cents?

14. *How many* could he have bought for sixty cents?

LESSON XIX.

In which we Divide by Eleven.

1. How many elevens are there in eleven ? **Eleven** is contained in eleven, how many **times** ?

2. How many elevens are there in twenty-two? Eleven in twenty-two, how many times?

3. How many elevens in thirty-three? **Eleven** in thirty-three, how many times ?

4. How many elevens in forty-four ? **Eleven in** forty-four, how many times ?

5. How many elevens in fifty-five? **Eleven** in fifty-five, how many times ?

6. How many elevens in sixty-six? **Eleven in** sixty-six, how many times?

7. How many elevens in seventy-seven ? **Eleven** in seventy-seven, how many **times** ?

8. How many elevens in eighty-eight ? **Eleven** in eighty-eight, how many times ?

9. How many elevens in ninety-nine ? **Eleven in** ninety-nine, how many times ?

Commit the following Table to memory :—

11 in 11 once	11 in 77 seven times
11 in 22 two times	11 in 88 eight times
11 in 33 three times	11 in 99 nine times
11 in 44 four times	11 in 110 ten times
11 in 55 five times	11 in 121 eleven times
11 in 66 six times	11 in 132 twelve times

LESSON XX.
Examples in the last Lesson.

1. James bought pineapples at eleven cents apiece; he paid twenty-two cents for them: how many did he buy?

2. John has forty-four toys, and puts them in rows of eleven each: how many rows has he?

3. If he has sixty-six, how many rows would he have?

4. A merchant bought coffee at eleven cents a pound, and laid out ninety-nine cents: how many pounds did he buy?

5. If he buys flour at eleven dollars a barrel, and expends one hundred and ten dollars: how many barrels will he buy?

6. How many barrels would he buy with one hundred and thirty-two dollars? How many with seventy-seven dollars? How many with forty-four?

7. A grocer buys fish at eleven cents each, and pays twenty-two cents: how many does he buy? How many would he buy with sixty-six cents? How many with seventy-seven cents? How many with ninety-nine cents?

8. How many pounds of coffee could you buy with sixty-six cents, at eleven cents a pound? How many pounds could you buy with seventy-seven cents? How many with eighty-eight cents? How many with thirty-three cents?

9. How many penknives, at eleven cents each, can James buy with ninety-nine cents? How many with eighty-eight? How many with eleven? How many with twenty-two?

LESSON XXI.

In which we Divide by Twelve.

1. How many twelves are there in twelve? Twelve is contained in twelve, how many times?

2. How many twelves are there in twenty-four? Twelve in twenty-four, how many times?

3. How many twelves in thirty-six? Twelve in thirty-six, how many times?

4. How many twelves in forty-eight? Twelve in forty-eight, how many times?

5. How many twelves in sixty? Twelve in sixty, how many times?

6. How many twelves in seventy-two? Twelve in seventy-two, how many times?

7. How many twelves in eighty-four? Twelve in eighty-four, how many times?

8. How many twelves in ninety-six? Twelve in ninety-six, how many times?

9. How many twelves in one hundred and eight? Twelve in one hundred and eight, how many times?

Commit the following Table to memory:—

12 in 12 once	12 in 84 seven times
12 in 24 two times	12 in 96 eight times
12 in 36 three times	12 in 108 nine times
12 in 48 four times	12 in 120 ten times
12 in 60 five times	12 in 132 eleven times
12 in 72 six times	12 in 144 twelve

LESSON XXII.

Examples in the last Lesson.

1. James bought twelve apples, for which he paid twelve cents: how much did he pay for each? Had he paid twenty-four cents for them, how much would he have paid for each? Had he paid thirty-six cents, how much would he have paid for each? Had he paid forty-eight cents, how much would he have paid for each?

2. A merchant paid twenty-four dollars for twelve yards of cloth, what did each yard cost him? Had he paid sixty dollars for it, what would each yard have cost him? Had he paid one hundred and eight dollars, what would each yard have cost him?

3. A teacher purchased twelve slates for his school, for which he paid one hundred and forty-four cents: how much did each cost him? Had he paid one hundred and thirty-two cents, how much would each have cost him? Had he paid one hundred and twenty cents, how much would each have cost him? Had he paid eighty-four cents, how much would each have cost him?

4. John bought twelve oranges for forty-eight cents, what did they cost him apiece? Had he paid sixty cents for them, what would they have cost him apiece? Had he paid seventy-two cents, what would they have cost him? Had he paid ninety-six cents, what would they have cost him? Had he paid one hundred and eight cents, what would they have cost him?

LESSON XXIII.

Examples in Division.

1. Two in five, how many times, and what over?

2. Two in seven, how many times, and what over?

3. Four in fifteen, how many times, and what over?

4. Five in nineteen, how many times, and what over?

5. Six in seven, how many times, and what over?

6. Eight in twelve, how many times, and what over?

7. Nine in fourteen, how many times, and what over?

8. Six in fifteen, how many times, and what over?

9. Ten in forty-six, how many times, and what over?

10. Four in thirty, how many times, and what over?

11. Eight in fifty, how many times, and what over?

12. The number over, is called a *remainder*.

13. Eight in seventeen, how many times, and what remainder?

14. Nine in forty, how many times, and what remainder?

15. Seven in fifty, how many times, and what remainder?

16. Five in forty, how many times, and what remainder?

17. Five in thirty, how many times, and what remainder?

18. Nine in sixty, how many times, and what remainder?

19. Six in forty, how many times, and what remainder?

20. Nine in eighty, how many times, and what remainder?

21. Eight in sixty, how many times, and what remainder?

22. Seven in fifty-six, how many times, and what remainder?

23. Eight in sixty-four, how many times, and what remainder?

24. Nine in fifty, how many times, and what remainder?

25. Six in fifty, how many times, and what remainder?

26. Four in twenty-five, how many times, and what remainder?

———

LESSON XXIV.
Examples in Division.

1. Eight in fifty-eight, how many times, and what remainder?

2. Nine in eighty-eight, how many times, and what remainder?

3. Nine in sixty-three, how many times, and what remainder?

4. Seven in fifty-five, how many times, and what remainder?

5. Seven in forty-nine, how many times, and what remainder?

6. Nine in forty, how many times, and what remainder?

7. Ten in ninety-nine, how many times, and what remainder?

8. Eight in fifty-one, how many times, and what remainder?

9. Six in fifty-nine, how many times, and what remainder?

10. Ten in eighty-nine, how many times, and what remainder?

11. Four in thirty-nine, how many times, and what remainder?

12. Five in forty-one, how many times, and what remainder?

13. Six in seventeen, how many times, and what remainder?

14. Nine in forty-seven, how many times, and what remainder?

15. Eight in fifty-four, how many times, and what remainder?

16. Nine in seventy-two, how many times, and what remainder?

17. Five in fifty, how many times, and what remainder?

18. Six in forty-eight, how many times, and what remainder?

19. Three in twenty-nine, how many times, and what remainder?

20. Eight in seventy-six, how many times, and what remainder?

21. *Seven in nineteen, how many times, and what remainder?*

LESSON XXV.

Examples in Division.

1. Charles being asked how many scholars there were in school, thought he would be a little smart, and counted their eyes, and answered that there were fifty eyes: how many scholars were there?

2. James went out fishing, and caught eighty fish; he could place only eight upon a string: how many strings did he want to hold them all?

3. In coming home, James had nine miles to travel; he could walk only three miles an hour: how long would it take him?

4. James Smart asked the master how long it would take Solomon Lazy to do the twenty sums in addition, as he only did four in an hour: what should the master answer?

5. A farmer received twenty-eight dollars for seven sheep: how much was that for each sheep?

6. It is thirty-four miles from New Haven to Hartford: how long will it take a man to walk from one place to the other, if he travels four miles an hour?

7. If forty-nine boys are placed on seven seats, how many are there on each seat?

8. Eight boys put their money together, and buy forty apples: if equally divided, how many will each have?

9. A sportsman killed four birds every time he fired; he killed, in all, eight: how many shots did he make?

10. James is to learn forty-two verses of Scripture in a week: how many must he learn each day?

11. A farmer sold nine cheeses for thirty-six dollars: how much did he get apiece?

12. James planted forty-eight kernels of corn, and put four in each hill: how many hills had he?

13. John has forty good marks after going to school for eight weeks: if he behaved equally well all the time, how many did he get each week?

14. If six yards of cloth cost twelve dollars, how much is that for each yard?

15. If four yards cost sixteen dollars, how much is it a yard?

16. If eight oranges cost thirty-two cents, how much does one orange cost?

17. If nine oranges cost fifty-four cents, how much does one orange cost?

18. How many reams of paper, at four dollars a ream, can you buy for thirty-six dollars?

19. How much for thirty-two dollars?

20. How much for sixteen dollars?

21. Four men bought a pair of oxen for one hundred dollars, and sold them again for eighty-four: how much did each one lose?

22. A man has forty-two dollars, which he lays out in wood, at six dollars a cord: how many cords does he buy?

23. A man has sixty-four pounds of butter, and *wishes to* divide it equally among eight boxes: how *much* must he put in each box?

LESSON XXVI.

The division table is to be learned by the eye, the same as the tables which precede. For example, the teacher is to point to 2, 4, 6, 8, 10, &c., in succession, and the pupil is to answer, 1, 2, 3, 4, 5, &c.

For the Eye.

| 1)1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |

For the Eye.

| 2)2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |

For the Eye.

| 3)3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |

For the Eye.

| 4)4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |

For the Eye.

| 5)5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |

For the Eye.

| 6)6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |

For the Eye.

| 7)7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 |

For the Eye.

| 8)8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 |

				For the Eye.							
9)9	18	27	36	45	54	63	72	81	90	99	108

				For the Eye.							
10)10	20	30	40	50	60	70	80	90	100	110	120

				For the Eye.							
11)11	22	33	44	55	66	77	88	99	110	121	132

				For the Eye.							
12)12	24	36	48	60	72	84	96	108	120	132	144

LESSON XXVII.

1. What is division?

Division is a short process of finding how many times one number contains another.

2. What is the number by which you divide called?

The divisor.

3. What is the number divided called?

The dividend.

4. What is the result called?

The quotient.

5. If the dividend does not contain the divisor an exact number of times, what is the number which is left called?

The remainder.

6. What is short division?

It is division in which the divisor does not exceed 12.

7. If the dividend and divisor are equal, what will the quotient be?

One, or a simple unit.

LESSON XXVIII.

(1)	(2)	(3)
2)60444	2)7456728	3)1450506

(4)	(5)	(6) .
. 3)48740362	4)8006300	6)4104702

(7)	(8)	(9)
7)84567042	8)81926704	9)906471

(10)	(11)	(12)
2)41670426	3)69984672	4)415285696

(13)	(14)	(15)
5)847523160	5)813067120	5)690497260

(16)	(17)	(18)
6)908704206	7)17041927	8)49672704

(19)	(20)	(21)
5)754926120	. 6)888888	7)999999

(22)	(23)	(24)
9)197046	10)4087460	11)227896416

(25)	(26)	(27)
12)884167416	12)4020300	11)44962060

(28)	(29)	(30)
9)810416115	8)7704664	11)91204619

LESSON XXIX.

Exercises in Short Division.

1. Divide 36 by 4.
We place the divisor, 4, on
the left of the dividend, 36.

divisor. dividend.
4)36
9 quotient.

2. Divide 360 by 2.

2)360
180

3. Divide 480 by 3.

3)480
160

4. Divide 328 by 4.

4)328
82

5. Divide 625 by 5.

5)625
125

6. Divide 930 by 6.

6)930
155

7. Divide 889 by 7.

7)889
127

8. Divide 1728 by 8.

8)1728
216

9. Divide 1269 by 9.

9)1269
141

LESSON XXX.

Exercises in Short Division.

1. If 847 yards of cloth be equally divided between 4 men, how much will each receive?

Ans. 211¾ yards.

2. A merchant bought cloth, for which he paid 4 dollars a yard, and paid in all 328 dollars: how many yards did he buy? *Ans.* 82.

3. If six men have a debt to pay of twelve hundred dollars, how much must each one pay?

Ans. $200.

4. A goldsmith sold six dozen of spoons, and received for them 144 dollars: how much did he receive per dozen? *Ans.* $24.

5. A farmer purchases a lot of sheep at $3 apiece, for which he paid $3294: how many did he buy?

Ans. 1098.

6. A drover bought a drove of hogs at $9 apiece; they cost him $9837: how many did he buy?

Ans. 1093.

7. At a general training, a regiment of men find their bill to be $2961, and each man is required to pay three dollars: how many men are there in the regiment? *Ans.* 987.

8. A man paid $256 for hay, at $8 a ton: how many tons did he buy? *Ans.* 32.

9. Mr. Wilson agreed to build a road for $8 a rod, and received $2560: how many rods did he make? *Ans.* 320

10. A regiment of soldiers being paid off, received $6780, each man receiving $10: how many men were there in the regiment? *Ans.* 678.

LESSON XXXI.

Exercises in Long Division.

	divisor.	dividend.	quotiont.

1. Divide 338 by 26.

Place the divisor on the left of the dividend, and the quotient at the right.

```
26)338(13
   26
   --
   78
   78
```

2. Divide 1748 by 46.

```
46)1748(38
   138
   ---
   368
   368
```

3. Divide   30660 by 84.   *Ans.*   365.
4. Divide   5655 by 87.   *Ans.*   65.
5. Divide   5850 by 90.   *Ans.·*   65.
6. Divide   4646 by 202.   *Ans.*   23.
7. Divide   9696 by 404.   *Ans.*   24.
8. Divide   2624 by 64.   *Ans.*   41.
9. Divide   1756 by 19.   *Ans.* 92—8 rem.
10. Divide   2170 by 14.   *Ans.*   155.
11. Divide   90525 by 71.   *Ans.* 1275.
12. Divide   153033 by 87.   *Ans.* 1759.
13. Divide   7210473 by 37.
                          Ans. 194877—24 rem.
14. Divide   147735 by 45.   *Ans.* 3283.
15. Divide   18576 by 48.   *Ans.*   387.
16. Divide   9576 by 72.   *Ans.*   133.
17. Divide   19296 by 96.   *Ans.*   201.
18. Divide   67289 by 261.
                          Ans. 257—212 rem.

LESSON XXXII.

Examples in Division.

1. There are 1560 eggs to be packed in 24 baskets: how many must be put in each basket?

Ans. 65.

2. The sum of $19125 is to be divided equally among a certain number of men. Now, each receives $425: how many men receive the money?

3. If a man travel 12775 miles in a year of 365 days, how far does he walk each day?

Ans. 35 *miles.*

4. A farmer sells a drove of sheep at $2 a head, and receives $1250: how many sheep did he sell?

Ans. 625.

5. By the census of 1830, it appeared that the city of New York contained 207020 inhabitants: allowing 5 to each house, how many houses were there in the city at that time? *Ans.* 41404.

6. A merchant has 5100 pounds of tea, and wishes to pack it in 60 chests: how many pounds must he put in each chest? *Ans.* 85.

7. A farmer goes to a store and buys a piece of cloth containing 36 yards, for which he pays $288: how much does he pay per yard? *Ans.* $8.

8. There are 24 hours in a day: how many days in 2040 hours? *Ans.* 85.

9. Twenty-three persons dined together; their bill was $92: how much had each to pay?

Ans. $4.

SECTION FIFTH.

FRACTIONS.

LESSON I.

Of the Fraction One Half.

1. If an apple be divided into two equal parts, each part is called a half.

2 How many halves are there in one apple?

3. If a pear be divided into two equal parts, what is each part called?

4. How many halves are there in a pear?

5. How many halves are there in one? In one and a half, how many?

6. How many halves are there in two pears? In two and a half, how many?

7. How many halves are there in three things? In three and a half, how many?

8. How many halves are there in four? In four and a half, how many?

9. How many halves are there in five? In five and a half, how many?

10. How many halves are there in six? In six and a half, how many?

11. How many halves are tnere in seven? In seven and a half, how many?

12. How many halves in eight? In eight and a half?

13. How many halves in nine? In nine and a half?

14. *How* many halves in ten? In ten and a half?

LESSON II.

Questions about Halves.

1. How many whole apples are there in two halves?
2. How many whole apples are there in four halves?
3. How many apples are there in five halves?
4. How many apples in six halves?
5. How many whole ones in twelve halves?
6. How many whole ones in twenty halves?
7. How many whole things in eighteen halves?
8. How many whole things in sixteen halves?
9. How many whole things in fifteen halves?
10. How many whole things in nine halves?
11. How many whole things in seven halves?
12. How many whole things in three halves?
13. How many whole things in ten halves?
14. How many whole things in thirteen halves?
15. How many whole things in seventeen halves?
16. How many whole things in eleven halves?
17. How many whole things in twenty-four halves?
18. How many whole things in thirty halves?
19. How many whole things in forty halves?
20. How many whole things in fifty halves?
21. How many whole things in sixty halves?
22. How many whole things in eighty halves?
23. How many whole things in ninety halves?
24. How many whole things in one hundred halves?
25. How many whole things in two hundred halves?
26. How many whole things in three hundred halves?
27. How many whole things in four hundred halves?
28. How many whole things in five hundred halves?

LESSON III.

Of the Fraction One Third.

1. If an apple be divided into three equal parts, each part is called one third.

2. How many thirds are there in one apple?

3. How many thirds are there in one?

4. How many thirds are there in two? In two and one third?

5. How many thirds are there in three? In three and two thirds? In three and one third?

6. How many thirds are there in four? In four and one third? In four and two thirds?

7. How many thirds are there in five? In five and two thirds? In five and one third?

8. How many thirds are there in six? In six and one third? In six and two thirds?

9. How many thirds are there in seven? In seven and one third? In seven and two thirds?

10. How many thirds are there in eight? In eight and one third? In eight and two thirds?

11. How many thirds are there in nine? In nine and one third? In nine and two thirds?

12. How many thirds are there in ten? In ten and two thirds?

13. How many thirds are there in eleven? In eleven and two thirds?

14. *How* many thirds are there in twelve? In *twelve* and one third?

LESSON IV.

Questions about Thirds.

1. How many whole things are there in three thirds?

2. How many whole things in five thirds?

3. How many whole things in six thirds? In eight thirds? In nine thirds?

4. How many whole things in twelve thirds? In fourteen thirds? In thirteen thirds?

5. How many whole things in fifteen thirds? In sixteen thirds? In seventeen thirds?

6. How many whole things are there in eighteen thirds? In nineteen thirds? In twenty thirds?

7. How many whole things are there in twenty-one thirds? In twenty-two thirds? In twenty-three thirds?

8. How many whole things are there in twenty-four thirds? In twenty-five thirds? In twenty-six thirds?

9. How many whole things are there in twenty-seven thirds? In twenty-eight thirds? In twenty-nine thirds?

10. How many whole things are there in thirty thirds? In thirty-one thirds? In thirty-two thirds?

11. How many whole things in sixty thirds?

12. If one third of an orange cost one cent, what will the whole orange cost? What will two oranges cost?

13. If one third of a yard of cloth cost two dollars, what will three yards cost?

14. If one third *of a* barrel of flour cost two dollars, what will six barrels cost?

LESSON V.

Of the Fraction One Fourth.

1. If an apple be divided into four equal parts, each part is called one fourth.

2. How many fourths are there in one thing? How many fourths are there in one half?

3. How many fourths are there in one and one half?

4. How many fourths are there in two? In two and one fourth? In two and one half?

5. How many fourths are there in three? In three and one half? In three and one fourth?

6. How many fourths are there in four? In four and one fourth? In four and one half?

7. How many fourths are there in five? In five and one fourth? In five and one half?

8. How many fourths are there in six? In six and one half? In six and three fourths?

9. How many fourths are there in seven? In seven and one half? In seven and three fourths?

10. How many fourths are there in eight? In eight and one fourth? In eight and one half? In eight and three fourths?

11. How many fourths are there in nine? In nine and one fourth? In nine and two fourths? In nine and three fourths?

12. How many fourths are there in ten? In ten d *one fourth*? In ten and one half? In ten and ree *fourths*?

LESSON VI.

Questions about Fourths.

1. How many whole things are there in four fourths? How many in five fourths? In six fourths? In seven fourths?

2. How many whole things in eight fourths? In nine fourths? In ten fourths? In eleven fourths?

3. How many whole things are there in twelve fourths? In thirteen fourths? In fourteen fourths? In fifteen fourths?

4. How many whole things are there in sixteen fourths? In seventeen fourths? In eighteen fourths? In nineteen fourths?

5. How many whole things are there in twenty fourths? In twenty-one fourths? In twenty-two fourths? In twenty-three fourths?

6. How many whole things are there in twenty-four fourths? In twenty-five fourths? In twenty-six fourths? In twenty-seven fourths?

7. How many whole things are there in twenty-eight fourths? In twenty-nine? In thirty? In thirty-one?

8. How many whole things are there in thirty-two fourths? In thirty-three fourths? In thirty-four fourths? In thirty-five fourths?

9. How many whole things are there in thirty-six fourths? In thirty-seven? In thirty-eight? In thirty-nine?

10. If one fourth of a barrel of flour cost two dollars, how much will one barrel cost?

11. If three fourths of a yard of cloth cost six dollars, how much will two yards cost?

LESSON VII.

Of the Fraction One Fifth.

1. If an apple be divided into five equal parts, each part is called one fifth.

2. How many fifths are there in one apple? How many fifths in one thing?

3. How many fifths are there in two? In two and one fifth? In two and two fifths?

4. How many fifths are there in three? In three and one fifth? In three and two fifths? In three and four fifths?

5. How many fifths are there in four? In four and one fifth? In four and two fifths? In four and three fifths?

6. How many fifths are there in five? In five and three fifths? In five and one fifth? In five and four fifths?

7. How many fifths are there in six? In six and one fifth? In six and two fifths? In six and four fifths?

8. How many fifths are there in seven? In seven and one fifth? In seven and two fifths? In seven and three fifths? In seven and four fifths?

9. How many fifths are there in eight? In eight and two fifths? In eight and three fifths? In eight and one fifth?

10. How many fifths are there in nine? In nine and one fifth? In nine and three fifths? In nine and four fifths?

11. How many fifths are there in ten? In ten and one fifth? In ten and three fifths? In ten and four fifths?

LESSON VIII.

Questions about Fifths.

1. How many whole apples are equal to five fifths of an apple? How many whole things in five fifths?

2. How many whole things in ten fifths? In twelve fifths? In fourteen fifths? In eleven fifths?

3. How many whole things are there in fifteen fifths? In sixteen fifths? In seventeen? In eighteen fifths?

4. How many whole things are there in twenty fifths? In twenty-one fifths? In twenty-two fifths? In twenty-four fifths?

5. How many whole things are there in twenty-five fifths? In twenty-six fifths? In twenty-seven fifths? In twenty-eight fifths?

6. How many whole things are there in thirty fifths? In thirty-three fifths? In thirty-four fifths?

7. How many whole things are there in thirty-five fifths? In thirty-six? In thirty-seven? In thirty-eight? In thirty-nine?

8. How many whole things are there in forty fifths? In forty-one fifths? In forty-two fifths? In forty-three fifths? In forty-four fifths?

9. How many whole things are there in forty-five fifths? In forty-six? In forty-seven? In forty-eight? In forty-nine fifths?

10. How many whole things are there in fifty fifths? In fifty-two fifths? In fifty-three? In *fifty-four fifths,* how many?

LESSON IX.

Of the Fraction One Sixth.

1. If an apple be divided into six equal parts, each part is called one sixth.

2. How many sixth parts are there in one apple?

3. How many sixths are there in one?

4. How many sixths are there in one and one sixth?

5. How many sixths are there in two? In two and three sixths? In two and four sixths?

6. How many sixths are there in three? In three and four sixths? In three and five sixths? In three and two sixths?

7. How many sixths are there in four? In four and three sixths? In four and five sixths? In four and two sixths?

8. How many sixths are there in five? In five and three sixths? In five and four sixths? In five and five sixths?

9. How many sixths are there in six? In six and three sixths? In six and five sixths?

10. How many sixths are there in seven? In seven and one sixth? In seven and two sixths? In seven and five sixths?

11. How many sixths are there in eight? In eight and one sixth? In eight and two sixths?

12. How many sixths are there in nine? In nine and two sixths? In nine and four sixths?

13. How many sixths are there in ten? In ten and one sixth? In ten and two sixths? In ten and three sixths? In ten and four sixths?

LESSON X.

Questions about Sixths.

1. James has six sixths of an apple : how many whole apples are they equal to ?

2. How many whole things are there in twelve sixths ?   In fifteen sixths ?   In sixteen sixths ?

3. How many whole things are there in eighteen sixths ?   In twenty-one sixths ?   In twenty-two sixths ?   In nineteen sixths ?

4. How many whole things are there in twenty-four sixths ? In twenty-five sixths ? In twenty-eight sixths ?

5. How many whole things are there in thirty sixths ? In thirty-five sixths ? In thirty-one sixths ? In thirty-two sixths ?

6. How many whole things are there in thirty-six sixths ? In thirty-eight sixths ? In forty sixths ? In forty-one sixths, how many ?

7. How many whole things are there in forty-two sixths ?   In forty-five sixths ?   In forty-seven sixths, how many ?

8. How many whole things are there in forty-eight sixths ? In fifty sixths, how many ? In fifty-one sixths, how many ?   In fifty-two sixths, how many ?

9. How many whole things are there in fifty-four sixths ?   In fifty-five, how many ?   In fifty-seven ? In fifty-eight ?   In fifty-nine ?

10. How many whole things are there in sixty sixths ?   In sixty-five sixths ?   In sixty-one sixths ?

LESSON XI.
Of the Fraction One Seventh.

1. If an apple be divided into seven equal parts, each part is called one seventh.

How many sevenths are there in one apple? How many sevenths in one thing?

2. How many sevenths are there in two things? In two and one seventh, how many? In two and two sevenths, how many?

3. How many sevenths are there in three things? In three and one seventh, how many? In three and two sevenths, how many?

4. How many sevenths are there in four things? In four and three sevenths, how many? In four and four sevenths, how many? In four and six sevenths?

5. How many sevenths are there in five? In five and two sevenths, how many? In five and three sevenths, how many? In five and six sevenths?

6. How many sevenths are there in six? In six and two sevenths, how many? In six and three sevenths? In six and four sevenths?

7. How many sevenths are there in seven? In seven and one seventh? In seven and three sevenths? In seven and four sevenths?

8. How many sevenths are there in eight? In eight and one seventh? In eight and two sevenths? In eight and five sevenths?

9. How many sevenths are there in nine? In nine and four sevenths? In nine and three sevenths?

10. How many sevenths are there in ten? In ten and one seventh? In ten and two sevenths? In ten and three sevenths?

LESSON XII.
Questions about Sevenths.

1. How many whole apples are there in seven sevenths of an apple? How many whole things are there in seven sevenths?

2. How many whole things are there in fourteen sevenths? In seventeen sevenths? In eighteen sevenths? In twenty sevenths?

3. How many whole things are there in twenty-one sevenths? In twenty-five sevenths? In twenty-three sevenths?

4. How many whole things are there in twenty-eight sevenths? In twenty-nine sevenths? In thirty sevenths? In thirty-two sevenths?

5. How many whole things are there in thirty-five sevenths? In thirty-six sevenths? In thirty-nine sevenths? In forty sevenths?

6. How many whole things are there in forty-two sevenths? In forty-three sevenths? In forty-four sevenths? In forty-six sevenths?

7. How many whole things are there in forty-nine sevenths? In fifty sevenths, how many? In fifty-four sevenths? In fifty-five sevenths?

8. How many whole things are there in fifty-six sevenths? In fifty-eight sevenths? In fifty-nine sevenths? In sixty sevenths? In sixty-one sevenths?

9. How many whole things are there in sixty-three sevenths? In sixty-five sevenths? In sixty-eight sevenths? In sixty-nine sevenths?

10. How many whole things are there in seventy sevenths? In seventy-four sevenths? In seventy-five sevenths? In seventy-six sevenths?

LESSON XIII.
Of the Fraction One Eighth.

1. If an apple be divided into eight equal parts, what is each part called? How many eighths are there in one?

2. How many eighths are there in two things? How many in two and one eighth? In two and five eighths? In two and six eighths?

3. How many eighths are there in three? In three and two eighths? In three and four eighths? In three and seven eighths? In three and six eighths?

4. How many eighths in four? In four and one eighth? In four and three eighths? In four and five eighths? In four and six eighths?

5. How many eighths are there in five? In five and one eighth? In five and two eighths? In five and three eighths? In five and five eighths?

6. How many eighths are there in six? In six and two eighths? In six and three eighths? In six and seven eighths? In six and four eighths?

7. How many eighths are there in seven? In seven and one eighth? In seven and two eighths? In seven and three eighths?

8. How many eighths are there in eight? In eight and one eighth? In eight and three eighths? In eight and four eighths? In eight and six eighths?

9. How many eighths are there in nine? In nine and one eighth? In nine and two eighths? In nine and three eighths? In nine and four eighths?

10. How many eighths are there in ten? In ten and one eighth? In ten and two eighths? In ten and three eighths?

LESSON XIV.
Questions about Eighths.

1. How many whole apples are there in eight eighths of an apple?

2. How many whole things are there in sixteen eighths? In eighteen eighths? In twenty eighths, how many whole things?

3. How many whole things are there in twenty-four eighths? In thirty eighths? In twenty-nine eighths? In twenty-seven eighths?

4. How many whole things are there in thirty-two eighths? In thirty-three eighths? In thirty-four eighths? In thirty-five eighths? In thirty-six eighths?

5. How many whole things are there in forty eighths? In forty-two eighths? In forty-four eighths? In forty-seven eighths, how many?

6. How many whole things are there in forty-eight eighths? In fifty eighths? In fifty-five eighths? In fifty-one eighths, how many?

7. How many whole things are there in fifty-six eighths? In sixty eighths? In sixty-three eighths? In sixty-two eighths, how many?

8. How many whole things are there in sixty-four eighths? In sixty-six eighths? In sixty-eight eighths? In sixty-nine eighths? In seventy eighths?

9. How many whole things are there in seventy-two eighths? In seventy-five eighths? In seventy-six eighths? In seventy eighths, how many?

10. How many whole things are there in eighty *eighths?* In eighty-one eighths? In eighty-two *eighths?* In eighty-seven eighths, how many?

LESSON XV.
Of the Fraction One Ninth.

1. If an apple be divided into nine equal parts, each part is called one ninth. How many ninths are there in one thing?

2. How many ninths are there in two things? How many in two and two ninths? In two and four ninths? In two and five ninths? In two and six ninths?

3. How many ninths are there in three? In three and seven ninths? In three and six ninths? In three and five ninths? In three and eight ninths?

4. How many ninths are there in four things? In four and one ninth? In four and three ninths? In four and six ninths? In four and eight ninths?

5. How many ninths are there in five? In five and two ninths? In five and three ninths? In five and four ninths? In five and six ninths?

6. How many ninths are there in six? In six and four ninths? In six and five ninths? In six and eight ninths?

7. How many ninths are there in seven? In seven and three ninths? In seven and four ninths? In seven and six ninths? In seven and eight ninths?

8. How many ninths are there in eight? In eight and one ninth? In eight and two ninths? In eight and four ninths?

9. How many ninths are there in nine? In nine and three ninths? In nine and four ninths? In nine and five ninths?

10. How many ninths are there in ten? In ten and one ninth? In ten and two ninths? In ten and eight ninths?

LESSON XVI.
Questions about Ninths.

1. How many whole apples are there in nine ninths of an apple? How many whole things are there in nine ninths?

2. How many whole things are there in eighteen ninths? In twenty ninths? In twenty-four ninths? In twenty-five ninths?

3. How many whole things are there in twenty-seven ninths? In twenty-nine ninths? In thirty-three ninths?

4. How many whole things are there in thirty-six ninths? In thirty ninths? In forty-two ninths? In forty-four ninths?

5. How many whole things are there in forty-five ninths? In forty-six ninths? In fifty ninths? In fifty-two ninths?

6. How many whole things are there in fifty-four ninths? In fifty-six ninths? In fifty-eight ninths? In sixty ninths?

7. How many whole things are there in sixty-three ninths? In sixty-five ninths? In sixty-eight ninths? In seventy ninths?

8. How many whole things are there in seventy-two ninths? In seventy-five ninths? In seventy-eight ninths? In seventy-nine ninths?

9. How many whole things are there in eighty-one ninths? In eighty-four ninths? In eighty-seven ninths? In eighty-nine ninths?

10. How many whole things are there in ninety ninths? In ninety-four ninths? In ninety-six ninths? In ninety-eight ninths?

LESSON XVII.

Of the Fraction One Tenth.

1. If an apple be divided into ten equal parts, each part is called one tenth. How many tenths are there in one thing?

2. How many tenths are there in two things? In two and three tenths? In two and five tenths? In two and nine tenths?

3. How many tenths are there in three? In three and four tenths? In three and five tenths? In three and six tenths?

4. How many tenths are there in four? In four and four tenths? In four and five tenths? In four and eight tenths?

5. How many tenths are there in five? In five and three tenths? In five and six tenths? In five and nine tenths?

6. How many tenths are there in six? In six and three tenths? In six and seven tenths? In six and eight tenths?

7. How many tenths are there in seven? In seven and three tenths? In seven and eight tenths? In seven and nine tenths?

8. How many tenths are there in eight? In eight and four tenths? In eight and five tenths? In eight and nine tenths?

9. How many tenths are there in nine? In nine and four tenths? In nine and five tenths? In nine and eight tenths?

10. How many tenths are there in ten? In ten and five tenths? In ten and six tenths? In ten and nine tenths?

LESSON XVIII.
Questions about Tenths.

1. How many whole things are there in ten tenths? In twelve tenths? In fifteen tenths? In eighteen tenths?

2. How many whole things are there in twenty tenths? In twenty-five tenths? In twenty-eight tenths? In twenty-nine tenths?

3. How many whole things are there in thirty tenths? In thirty-five tenths? In thirty-six tenths?

4. How many whole things are there in forty tenths? . In forty-four tenths? In forty-six tenths? In forty-eight tenths?

5. How many whole things are there in fifty tenths? In fifty-five tenths? In fifty-seven tenths? In fifty-nine tenths?

6. How many whole things are there in sixty tenths? In sixty-five tenths? In sixty-seven tenths? In sixty-eight tenths?

7. How many whole things are there in seventy tenths? In seventy-six tenths? In seventy-eight tenths? In seventy-nine tenths?

8. How many whole things are there in eighty tenths? In eighty-four tenths? In eighty-six tenths? In eighty-eight tenths?

9. How many whole things are there in ninety tenths? In ninety-five tenths? In ninety-six tenths? In ninety-eight tenths?

10. How many whole things are there in one hundred tenths? In one hundred and six tenths? In one hundred and eight tenths? In one hundred and nine ten ths?

LESSON XIX.
Of the Fraction One Eleventh.

1. If an apple be divided into eleven equal part each part is called one eleventh. How many eleventh are there in one thing?

2. How many elevenths are there in two things? two and four elevenths? In two and six elevenths

3. How many elevenths are there in three things In three and one eleventh? In three and thr elevenths?

4. How many elevenths are there in four thing In four and two elevenths, how many? In four a seven elevenths? In four and nine elevenths?

5. How many elevenths are there in five? In fi and three elevenths? In five and four elevenths

6. How many elevenths are there in six? In s and nine elevenths? In six and ten elevenths?

7. How many elevenths are there in seven? seven and three elevenths? In seven and fo elevenths?

8. How many elevenths are there in eight? eight and one eleventh? In eight and thr elevenths? In eight and nine elevenths?

9. How many elevenths are there in nine? In ni and one eleventh? In nine and ten elevenths? nine and five elevenths?

10. How many elevenths are there in ten? In t and three elevenths? In ten and four elevenths? 'en and five elevenths?

11. How many elevenths are there in eleven? *leven* and three elevenths? In eleven and eig *eleven*ths?

LESSON XX.
Questions about Elevenths.

1. How many whole things are there in eleven elevenths? In fourteen elevenths, how many? In sixteen elevenths, how many?

2. How many things are there in twenty-two elevenths? In twenty-five elevenths, how many? In thirty elevenths, how many?

3. How many whole things are there in thirty-three elevenths? In forty elevenths, how many? In thirty-nine elevenths, how many?

4. How many whole things are there in forty-four elevenths? In forty-nine elevenths, how many? In forty-seven elevenths, how many?

5. How many whole things are there in fifty-five elevenths? In sixty elevenths, how many?

6. How many whole things are there in sixty-six elevenths? In seventy elevenths, how many?

7. How many whole things are there in seventy-seven elevenths? In eighty elevenths, how many?

8. How many whole things are there in eighty-eight elevenths? How many in ninety elevenths? In ninety-five? In ninety-seven?

9. How many whole things are there in ninety-nine elevenths? In one hundred and six? In one hundred and eight?

10. How many whole things are there in one hundred and ten elevenths? In one hundred and fifteen elevenths, how many?

11. How many whole things are there in one hundred and twenty-one elevenths? In one hundred and twenty-nine?

LESSON XXI.
Of the Fraction One Twelfth.

1. If an apple be divided into twelve equal parts, each part is called one twelfth. How many twelfths in one?

2. How many twelfths are there in two? How many in two and three twelfths? In two and eight twelfths, how many?

3. How many twelfths are there in three? In three and four twelfths, how many? In three and six twelfths, how many?

4. How many twelfths are there in four? How many in four and three twelfths? How many in four and nine twelfths? In four and eleven twelfths?

5. How many twelfths in five? How many in five and seven twelfths? How many in five and nine twelfths? How many in five and eleven twelfths?

6. How many twelfths in six? How many in six and eight twelfths? How many in six and ten twelfths? How many in six and seven twelfths?

7. How many twelfths in seven? How many in seven and two twelfths?

8. How many twelfths in eight? How many in eight and four twelfths? How many in eight and nine twelfths?

9. How many twelfths in nine? How many in nine and three twelfths? In nine and eleven twelfths?

10. How many twelfths are there in ten? How many in ten and six twelfths? How many in ten and nine twelfths? In ten and eleven twelfths?

11. How many twelfths are there in eleven? In eleven and nine twelfths?

LESSON XXII.
Questions about Twelfths.

1. How many whole things are there in twelve twelfths? How many in fifteen twelfths? In sixteen twelfths? In eighteen twelfths?

2. How many whole things are there in twenty-four twelfths? In twenty-nine twelfths? In thirty? In thirty-four? In thirty-five?

3. How many whole things are there in thirty-six twelfths? In forty? In forty-four? In forty-five?

4. How many whole things are there in forty-eight twelfths? In fifty? In fifty-six? In fifty-eight?

5. How many whole things are there in sixty twelfths? In sixty-seven twelfths, how many? How many in sixty-nine twelfths? In seventy-one?

6. How many whole things are there in seventy-two twelfths? In seventy-eight? In seventy-nine? In eighty? In eighty-two? In eighty-three?

7. How many whole things in eighty-four twelfths? How many in eighty-six? How many in eighty-eight? How many in ninety?

8. How many whole things in ninety-six twelfths? In one hundred, how many? How many in one hundred and six? In one hundred and eight?

9. How many whole things in one hundred and eight twelfths? How many in one hundred and ten?

10. How many whole things in one hundred and twenty twelfths? In one hundred and twenty-five?

11. How many whole things in one hundred and thirty-two twelfths? In one hundred and thirty-nine?

12. How many whole things in one hundred and forty-four twelfths? In one hundred and fifty?

LESSON XXIII.

Of writing Fractions in Figures.

1. The following is the manner of writing fractions with figures :—

$\frac{1}{2}$	one half.	$\frac{1}{8}$	one eighth.
$\frac{1}{3}$	one third.	$\frac{1}{9}$	one ninth.
$\frac{1}{4}$	one fourth.	$\frac{1}{10}$	one tenth.
$\frac{1}{5}$	one fifth.	$\frac{1}{12}$	one twelfth.
$\frac{1}{6}$	one sixth.	$\frac{1}{14}$	one fourteenth.
$\frac{1}{7}$	one seventh.	$\frac{1}{20}$	one twentieth.

Q. What is the figure above the line called? *A.* The numerator.

Q. What is the figure below the line called? *A.* The denominator.

Q. What does the denominator show? *A.* It shows into how many equal parts the single thing is divided.

Q. What does the numerator show? *A.* How many of those equal parts are taken.

Q. What may the single thing which is divided be called? *A.* A unit, or one.

Q. Is one apple a unit? Is one peach a unit? Is one dollar a unit? Is one book a unit?

Q. In the fraction $\frac{1}{3}$, into how many parts is the unit divided? Which figure is the numerator? Which the denominator?

Q. In the fraction $\frac{1}{12}$, into how many parts is the *unit divided*? Which is the numerator? Which the denominator?

LESSON XXIV.

About writing Fractions.

1. Read the following fractions :—

$\frac{3}{8}$	three eighths.	$\frac{41}{16}$	forty-one sixteenths.
$\frac{3}{7}$	three sevenths.	$\frac{44}{85}$	forty-four eighty-fifths.
$\frac{5}{9}$	five ninths.	$\frac{27}{18}$	twenty-seven eighteenths.
$\frac{6}{12}$	six twelfths.	$\frac{31}{48}$	thirty-one forty-eighths.
$\frac{7}{15}$	seven fifteenths.	$\frac{39}{74}$	thirty-nine seventy-fourths.
$\frac{8}{13}$	eight thirteenths.	$\frac{19}{20}$	nineteen twentieths.

2. In the fraction $\frac{3}{8}$, into how many equal parts is the unit divided ? How many of these parts are taken ?

3. In the fraction $\frac{3}{7}$, into how many equal parts is the unit divided ? How many parts are taken ?

4. In the fraction $\frac{5}{9}$, into how many equal parts is the unit divided ? How many parts are taken ?

5. In the fraction $\frac{5}{9}$, into how many equal parts is the unit divided ? How many parts are taken ?

6. In the fraction $\frac{6}{12}$, into how many equal parts is the unit divided ? How many parts are taken ?

7. In the fraction $\frac{7}{15}$, into how many equal parts is the unit divided ? How many parts are taken ?

8. In the fraction $\frac{8}{13}$, into how many equal parts is the unit divided ? How many parts are taken ?

9. In the fraction $\frac{41}{16}$, into how many equal parts *is the unit divided* ? How many parts are taken ?

LESSON XXV.
Questions in Fractions.

1. Write one third of one. *Ans.* $\frac{1}{3}$.
2. Write one third of two. *Ans.* $\frac{2}{3}$.
3. Write one third of four. *Ans.* $\frac{4}{3}$.
4. What is one fifth of 6? What is one sixth of 7?
5. What number is that of which 2 is the one half?
6. What number is that of which 7 is the one tenth?
7. What number is that of which 9 is the one third?
8. What number is that of which 6 is the one fourth?
9. What number is that of which 6 is the one sixth?
10. What number is that of which 1 is the one third?
11. What number is that of which 1 is the quarter?
12. What number is that of which 3 is the quarter?
13. What figures express four twelfths?
14. What figures express three tenths?
15. What figures express seven ninths?
16. What figures express eighteen sixteenths?
17. What figures express one third of seven?
18. What figures express one twelfth of six?
19. What figures express nine eighths of one?
20. What figures express eleven tenths of one?
21. What figures express two thirds of one?
22. What figures express three sevenths of one?
23. What is one eighth of two?
24. What expresses one ninth of six?
25. What expresses one seventeenth of eight?

SECTION SIXTH.

LESSON L.

About Federal Money.

TABLE OF FEDERAL MONEY.

10 mills make - - - 1 cent - - - - -	*ct.*
10 cents - - - - 1 dime - - - - -	*d.*
10 dimes - - - 1 dollar - - - -	**$.**
10 dollars - - - 1 eagle - - - -	*E.*

1. How many mills are there in two cents? In three cents? In half a cent? In five cents? In five cents and a half? In eight cents and a half?

2. How many cents are there in ten mills? In fifteen mills? In sixty-five mills? In seventy mills? In eighty mills?

3. How many cents are there in five dimes? In six dimes? In eight dimes? In ten dimes? In twelve dimes?

4. How many dimes are there in ten cents? In twelve cents? In sixteen cents? In thirty cents? In forty-five cents?

5. How many dimes in one dollar? In two dollars? In three dollars? In four dollars? In five dollars? In six dollars? In seven dollars? In seven dollars and a half?

6. How many dollars in one eagle? In two eagles? In five eagles? In six eagles? In nine eagles?

7. How many eagles in twenty dollars? In thirty dollars? In fifty dollars? In sixty dollars?

6.7 **LESSON II.**

Exercises in Addition and Subtraction of Federal Money.

$	cts.	m.		$	cts.	m.		$	cts.	m.
67	05	8		46	27	7		96	90	8
7	17	8		21	04	3		127	87	6
20	41	2		6	88	5		3	04	7
$94	64	8		$74	20	5		$227	83	1

$	cts.	m.		$	cts.	m.		$	cts.	m.
378	27	4		879	04	7		927	27	4
37	04	5		627	49	3		327	09	5
128	41	6		127	04	2		14	21	3
4327	05	9		400	21	6		6	89	2

	$	cts.	m.		$	cts.	m.		$	cts.	m.
From	128	87	5		90	40	8		169	81	8
Take	20	90	3		80	29	6		26	42	6
Rem.	107	97	2		10	11	2		143	39	2

	$	cts.	m.		$	cts.	m.		$	cts.	m.
From	825	67	4		167	98	8		128	69	8
Take	127	48	3		67	47	3		84	60	7
Rem.	698	19	1		100	51	5		44	09	1

1. John bought a pound of tea for $6,04, a loaf of sugar for $1,75, a gallon of vinegar for 87½ cents, and a box of candles for $2,75½ : what did the whole cost ? *Ans.* $11,42.

2. The dairy of a farmer produces $600, of which *he expends* $250 : how much does he make ?
Ans. $350.

ϑ   **LESSON III.**

Exercises in Multiplication and Division of Federal Money.

1. Multiply 375 dollars, 26 cents, and 4 mills, by 3 ; also by 4.

$	cts.	m.		$	cts.	m.
$375	26	4		$375	26	4
	.	3				4
$1125	79	2		$1501	05	6

2. What will 55 yards of cloth cost, at 37 cents a yard ?   *Ans.* $20,35.

3. What will 85 pounds of tea cost, at $1,37½ a pound ?   *Ans.* $116,87,5.

4. A bale of cloth contains 95 pieces, costing $40,37,5 each : what is the entire cost of the bale ?
                    Ans. $3835,62,5.

5. What is the cost of 356 sheep, at $3,25 apiece ?   *Ans.* $1157.

6. What is the value of 47 barrels of apples, at $¾ a barrel ?   *Ans.* $85,25.

7. What is the cost of 6000 bricks, at $4,37,5 a thousand ?   *Ans.* $26,25.

8. There are $18000 to be divided between 40 men : how much must each receive ?   *Ans.* $450.

9. A farmer purchased a farm containing 725 acres, for which he paid $18306,25 : how much did it cost him per acre ?   *Ans.* $25,25.

10. A drover pays $1250 for 500 sheep : what *must he sell* them for apiece, that he may neither *make nor lose* by the bargain?   Ans. $2,50

LESSON IV.

About Sterling Money.

4 TABLE OF STERLING MONEY.

4 farthings make -	1 penny - - - -	*d.*
12 pence - - - -	1 shilling - - -	*s.*
20 shillings - - -	1 pound .- - -	£.
21 shillings - - -	1 guinea - - -	

1. How many farthings are there in one penny? In two pence? In four? In six? In eight? In ten? In seven? In five?

2. How many pence in four farthings? In eight farthings? In twelve? In fourteen? In sixteen? In twenty? In twenty-four?

3. How many pence are there in one shilling? In two shillings? In three shillings? In four shillings?

4. How many shillings are there in twelve pence? In eighteen? In twenty? In twenty-four? In twenty-six pence?

5. How many shillings are there in one pound? In two pounds? In three? In five? In four pounds?

6. How many pounds are there in twenty shillings? In forty shillings? In sixty shillings? In eighty shillings? In one hundred shillings?

7. How many guineas in twenty-one shillings? In forty-two shillings? In eighty-four shillings? In sixty-three shillings?

8. How many shillings in one guinea? In two guineas? In three guineas?

LESSON V.

About Troy Weight.

TABLE OF TROY WEIGHT.

24 grains, *gr.* make	1 pennyweight,	- *pwt.*
20 pennyweights -	1 ounce, - - -	*oz.*
12 ounces - - -	1 pound, - - -	*lb.*

1. How many grains are there in one pennyweight? In two pennyweights? In three pennyweights? In four pennyweights?

2. How many pennyweights are there in twenty-four grains? In forty-eight grains? In seventy-two grains? In ninety-six grains?

3. How many pennyweights in one ounce? In two ounces? In three? In four? In five?

4. How many ounces are there in twenty pennyweights? In forty pennyweights? In sixty? In eighty pennyweights?

5. How many ounces are there in one pound? In two pounds? In three pounds? In four pounds? In five pounds?

6. How many pounds in twelve ounces? In twenty-four? In thirty-six? In forty-eight? In sixty?

7. How many pennyweights in four ounces? In two ounces? How many grains in one ounce? In two ounces? In three ounces?

LESSON VI.

About Apothecaries' Weight.

TABLE OF APOTHECARIES' WEIGHT.

20 grains, *gr.* make	1 scruple, - - -	Ɔ.
3 scruples - - -	1 dram, - - -	Ʒ.
8 drams - - -	1 ounce, - - -	℥.
12 ounces - - -	1 pound, - - -	℔.

1. How many grains are there in one scruple? In two scruples? In three? In four?

2. How many scruples in twenty grains? In forty? In sixty? In eighty?

3. How many scruples in one dram? In two? In three? In four, how many?

TABLE OF AVOIRDUPOIS WEIGHT.

16 drams, *dr.* make	1 ounce, - - -	*oz.*
16 ounces - - -	1 pound, - - -	*lb.*
25 pounds - - -	1 quarter, - -	*qr.*
4 quarters, - -	1 hundred weight,	*cwt.*
20 hundred weight,	1 ton, - - - -	*T.*

1. How many drams in an ounce? How many ounces in a pound? How many pounds in a quarter? How many quarters in a hundred? How many hundred in a ton?

2. How many drams in two ounces? How many ounces in two pounds? How many pounds in two quarters? How many quarters in two hundred? How many hundreds in two tons?

LESSON VII.

About Long Measure.

TABLE OF LONG MEASURE.

3 barleycorns, *bar.* make	1 inch, - - - -	*in.*
12 inches - - - - -	1 foot, - - - -	*ft.*
3 feet - - - - - -	1 yard, - - - -	*yd.*
5½ yards, or 16½ feet - -	1 rod, perch, or pole,	*rd.*
40 rods - - - - - -	1 furlong, - - -	*fur.*
8 furlongs, or 320 rods -	1 mile, - - - -	*m.*
3 miles - - - - - -	1 league, - - - -	*L.*
60 geographical or 69½ } statute miles - - {	1 degree, - -	*deg.* or °.
360 degrees - - - -	a great circle.	

1. How many barleycorns in one inch? In two?

2. How many inches in three barleycorns? In six? In nine? In twelve? In fifteen? In twenty-four?

3. How many inches in one foot? In two feet?

4. How many feet in twelve inches?

5. How many feet in one yard? In two yards?

6. How many yards in three feet? In nine?

7. How many yards in a rod? How many feet?

8. How many rods in a furlong? In two?

9. How many furlongs in forty rods? In eighty?

10. How many furlongs in a mile? In four?

11. How many miles in eight furlongs? In sixteen?

12. How many miles in one league? In two?

13. How many leagues in three miles? In six?

14. How many geographical miles make a degree?

15. How many statute miles make a degree?

16. *How many degrees make a circle?*

17. *How many make two great circles?*

LESSON VIII.

About Land or Square Measure.

TABLE OF SQUARE MEASURE.

144 square inches, *sq. in.* make	1 square foot,	*sq. ft.*
9 square feet - - - - -	1 square yard,	*sq. yd.*
30¼ square yards - - - -	1 square pole, -	*P.*
40 square poles - - - -	1 rood, - - -	*R.*
4 roods - - - - - - -	1 acre, - - -	*A.*
640 acres - - - - - - -	1 square mile, -	*M.*

1. How many square inches make a square foot?

2. How many square inches in two square feet?

3. How many square feet make one square yard? How many square feet in two square yards? In three? In four? In five? In nine? In ten?

4. How many square yards make a square pole?

5. How many square poles in a rood? How many in two roods? In three?

6. How many roods in forty square poles? In eighty? In one hundred and twenty, how many?

7. How many roods in one acre? How many in two acres? How many in three acres? How many in four? How many in five? How many in six? How many in seven? How many in eight? In nine? In ten?

8. How many acres in four roods? In eight, *how many?* In twelve? In sixteen? In twenty? *In twenty*-four?

9. How many acres make one square mile?

LESSON IX.

About Cloth Measure.

TABLE OF CLOTH MEASURE.

2¼ inches,	*in.*	make	1 nail,	- - - -	*na.*
4	nails - - - -		1 quarter of a yard,		*qr.*
4	quarters - - -		1 yard,	- - -	*yd.*
3	quarters - - -		1 Ell Flemish,		*E. Fl.*
5	quarters - - -		1 Ell English,		*E. E.*
6	quarters - - -		1 Ell French,		*E. Fr.*

1. How many inches make a nail? How many make two nails? Three nails? Four nails?

2. How many nails make a quarter of a yard? How many make two quarters? How many make three quarters? How many make one yard?

3. How many quarters make one yard? How many make two yards? Three yards? Four yards? Five yards?

4. How many quarters make an Ell Flemish? How many make two Ells? Three Ells? Four? Five? Six? Seven?

5. How many Ells Flemish in three quarters of a yard? In six quarters? In nine? In twelve? In fifteen?

6. How many quarters make an Ell English? How many make two Ells? Three? Four? Six?

7. How many quarters make one Ell French? How many make two? Three? Four? Five? Six? Seven? Eight? Nine?

8. *How* many Ells French in six quarters? In twelve? *In* eighteen? In twenty-four? In thirty?

LESSON X.

About Wine Measure.

TABLE OF WINE MEASURE.

4	gills,	*gi.*	make	1 pint, - - *pt.*
2	pints - - - - -			1 quart, - - *qt.*
4	quarts - - - - -			1 gallon, - *gal.*
31½	gallons - - - -			1 barrel, - *bar.*
63	gallons - - - -			1 hogshead, *hhd.*
2	hogsheads - - -			1 pipe, - - *pi.*
2	pipes or 4 hogsheads			1 tun, - - *tun.*

1. How many gills make a pint? How many make two pints? Three? Four? Five? Six?

2. How many pints in a quart? In two quarts? In three quarts? In four? In six? In seven?

3. How many quarts in two pints? In four pints? In six? In eight? In ten? In twelve?

4. How many quarts in one gallon? How many in two? In three? In four? In five? In seven?

5. How many gallons in four quarts? In eight quarts? In twelve? In sixteen? In twenty?

6. How many gallons in a barrel? In two barrels, how many?

7. How many gallons in a hogshead? In two?

8. How many hogsheads in a pipe? In two pipes? In three pipes, how many? In four? In five?

9. How many pipes in two hogsheads? In four? In six? In eight? In ten? In twelve? In sixteen?

10. How many pipes in one tun? In two tuns? In three? In four? In six?

11. How many tuns in two pipes? In four? In six?

LESSON XI.

About Ale and Beer Measure.

TABLE OF ALE AND BEER MEASURE.

2 pints, *pt.* make	1 quart, - - -	*qt.*
4 quarts - - -	1 gallon, - - -	*gal.*
36 gallons - - -	1 barrel, - - -	*bar.*
54 gallons - - -	1 hogshead, - -	*hhd.*

1. How many pints make a quart? How many pints in two quarts? In three? In four? In five?

2. How many quarts in two pints? In four? In six? In eight? In ten? In twelve?

3. How many quarts make a gallon? How many quarts in two gallons? In four? In five?

4. How many gallons in four quarts? In eight? In twelve? In sixteen? In twenty? In twenty-four?

5. How many gallons in a barrel? In ten barrels? In three? In five? In seven? In six?

6. How many barrels in thirty-six gallons? In seventy-two? In one hundred and eight gallons?

7. How many gallons in a hogshead? In two?

8. How many hogsheads in fifty-four gallons? In one hundred and eight, how many?

9. How many pints in a gallon? In two? In three? In four? In five, how many?

10. *How* many quarts in a barrel? In two? In three? In four? In five? In six, how many?

LESSON XII.

About Dry Measure.

TABLE OF DRY MEASURE.

2 pints, *pt.* make	1 quart,	- - -	*qt.*
8 quarts	- - - 1 peck,	- - -	*pk.*
4 pecks	- - - 1 bushel,	- - -	*bu.*
36 bushels	- - - 1 chaldron,	- -	*ch.*

1. How many pints in a quart? In two quarts? In three quarts? In four? In five? In six?

2. How many quarts in two pints? In four? In six? In eight? In ten? In twelve? In sixteen? In eighteen? In twenty? In twenty-two?

3. How many quarts in a peck? In two pecks? In three? In four? In five?

4. How many pecks in eight quarts? In sixteen? In twenty-four? In thirty-two? In forty? In forty-eight? In sixty-four? In seventy-two?

5. How many pecks in one bushel? In two? In three? In four? In five? In six? In seven? In eight? In nine? In ten?

6. How many bushels in four pecks? In eight? In twelve? In sixteen? In twenty? In twenty-four? In twenty-eight? In thirty-two? In forty?

7. How many bushels in one chaldron? In two? In three, how many?

8. How many chaldrons in thirty-six bushels? In seventy-two? In one hundred and eight?

LESSON XIII.

About Time.

TABLE.

60 seconds, *sec.* make 1 minute, - - -		*m.*
60 minutes - - - 1 hour, - - -		*hr.*
24 hours - - - 1 day, - - - -		*da.*
7 days - - - - 1 week, - - -		*wk.*
4 weeks - - - 1 month, - - -		*mo.*
52 weeks - - - 1 year, - - -		*yr.*
100 years - - - - 1 century, - - -		*C.*

The year is also divided into twelve calendar months, which contain an unequal number of days.

1	month	January, - - -	31
2	- - -	February, - - -	28
3	- - -	March, - - - -	31
4	- - -	April, - - - -	30
5	- - -	May, - - - -	31
6	- - -	June, - - - -	30
7	- - -	July, - - - -	31
8	- - -	August, - - -	31
9	- - -	September, - -	30
10	- - -	October, - - -	31
11	- - -	November, - -	30
12	- - -	December, - -	31
		Total	365

Thirty days hath September,
April, June, and November;
All the rest have thirty-one,
Excepting February, twenty-eight alone.

LESSON XIV.

About Circular Motion.

TABLE OF CIRCULAR MOTION.

60 seconds, ″ make	1 minute,	- - -	′.
60 minutes - - -	1 degree,	- - -	°.
30 degrees - - -	1 sign, -	- - -	s.
12 signs, or 360° -	1 circle,	- - -	c.

1. How many seconds make a minute? How many seconds in two minutes? In three?

2. How many minutes in one degree? In two?

3. How many degrees in one sign? In two?

4. How many signs in one circle? In two?

TABLE OF PARTICULARS.

12 things make - - -	1 dozen.
12 dozen - - - - -	1 gross.
12 gross, or 144 dozen -	1 great gross.

ALSO,

20 things make - - -	1 score.
112 pounds - - - - -	1 quintal of fish.
24 sheets of paper - -	1 quire.
20 quires - - - - -	1 ream.

BOOKS.

A sheet folded in two leaves is called a folio.

" folded in four leaves - - a quarto.

" folded in eight leaves - - an octavo or 8vo.

" *folded in* twelve leaves - a duodecimo or 12mo.

" *folded in* eighteen leaves - an 18mo.

LESSON XV.

About Solid, or Cubic Measure.

TABLE OF SOLID, OR CUBIC MEASURE.

1728 solid inches, *S. in.* make 1 solid foot,   *S. ft.*
  27 solid feet - - - - - 1 solid yard, *S. yd.*
  40 feet of round, or 50 feet }
    of hewn timber, - - - } 1 ton, - - *Ton*
128 solid feet=8×4×4, that is, a }
    pile 8 feet in length, 4 feet in } 1 cord of
    width, and 4 feet in height, } wood, - *C.*

1. What is a cord foot ?

A cord foot is one foot in length of the pile which makes a cord.

2. How many solid feet does it contain ?

It contains sixteen solid feet.

————

QUESTIONS ON THE TABLES.

Federal Money.

1. What is the currency of the United States ?

Federal money is the currency of the United States.

2. What are its denominations ?

Its denominations, or names, are eagles, dollars, dimes, cents, and mills.

3. Of what are the coins of the United States made ?

The coins of the United States are of gold, silver and copper.

4. Which are gold ?

The eagle, half-eagle, quarter-eagle, and dollar.

5. Which are silver?

The dollar, half-dollar, quarter-dollar, dime, and half-dime.

6. Which are copper?

The cent and half-cent.

Sterling, or English Money.

1. What are the denominations of English money?

The denominations of English money, are guineas, pounds, shillings, pence, and farthings.

2. Where is this money used as a currency?

In the British Empire.

Troy Weight.

1. What things are weighed by Troy weight?

Gold, silver, jewels, and liquors, are weighed by this weight.

2. What are its denominations?

Its denominations are pounds ounces, penny-weights, and grains.

Apothecaries' Weight.

1. What is the use of the Apothecaries' Weight?

This weight is used by apothecaries and physicians in mixing their medicines.

2. What are its denominations?

Its denominations are, pounds, ounces, drachms, uples, and grains.

3. Of what value are the pound and ounce?

The pound and ounce are the same as the pound d ounce in the Troy weight; the difference be-
een the two weights consists in the different divi-
ons and sub-divisions of the ounce.

Avoirdupois Weight.

1. For what is this weight used?

By this weight are weighed all coarse articles, such as hay, grain, chandlers' wares, and all the metals, except gold and silver.

2. What is a hundred weight?

Formerly it was 112 pounds; but it is now fixed by an act of Congress at 100 pounds.

Long Measure.

1. For what is long measure used?

This measure is used to measure distances, lengths, breadths, heights, depths, &c.

2. What is a fathom?

A fathom is a length of six feet, and is generally used to measure the depth of water.

3. What is a hand?

A hand is four inches, and is used to measure the height of horses.

Land, or Square Measure.

1. For what is square measure used?

Land, or Square Measure, is used in measuring land, or anything in which length and breadth are both considered.

2. How is land generally estimated?

Land is generally estimated in square miles, acres, roods, and square poles, or perches.

Cloth Measure.

1. For what is Cloth Measure used?

Cloth measure is used for measuring all kinds of cloth.

2. What are its denominations?

Its denominations are, ells French, ells English, *ells Flemish,* yards, quarters, nails, and inches.

Liquid, or Wine Measure.

1. What is measured by Liquid Measure ?

The standard gallon of the United States is the wine gallon of Great Britain, and contains 231 cubic inches.   This is the standard for all liquids.

2. What are its denominations ?

Its denominations are, tuns, pipes, hogsheads barrels, gallons, quarts, pints, and gills.

Dry Measure.

1. For what is Dry Measure used ?

Dry Measure is used in measuring all dry articles such as grain, fruits, roots, salt, coal, &c.

2. What are its denominations ?

Its denominations are chaldrons, bushels, pecks quarts, and pints.

Circular Measure, or Motion.

1. For what is Circular Measure used ?

Circular Measure is used in estimating latitude and longitude, and also in measuring the motions of the heavenly bodies.

2. How is every circle supposed to be divided ?

Every circle is supposed to be divided into 360 equal parts, called degrees.   Each degree is divided into 60 minutes, and each minute into 60 seconds.

Solid, or Cubic Measure.

1. For what is Solid, or Cubic Measure used ?

Solid, or Cubic Measure is used in measuring stone, timber, earth, and such other things as have three dimensions, length, breadth, and thickness.

2. What are its denominatious ?

Its denominations are, tons, cords, yards, feet, and inches.

LESSON XVI.

About Denominate Numbers.

Question. What is a denominate number?

Answer. One in which the kind of unit is *named.* Thus, 3 pounds of tea is a denominate number—the unit of which is one pound of tea.

Question. What is the unit of the number four yards? What is the unit of the number six hours?

1. In £30 how many shillings?   *Ans.*   600.

2. In 10*s.* how many pence?   *Ans.*   120.

3. In 11*d.* how many farthings?   *Ans.*   44.

4. Reduce £15 19*s.* 11*d.* to farthings.

Ans. 15356.

5. Reduce 44 farthings to pence. *Ans.*   11.

6. Reduce 228*d.* to shillings.   *Ans.*   19.

7. How many farthings are there in £2?

Ans.   1920.

8. How many farthings in £27 6*s.* 8*d.*?

Ans. 26240.

9. How many farthings in £1465 14*s.* 5*d.*?

Ans. 1407092.

10. How many pence in £145 16*s.* 11*d.*?

Ans. 35003.

11. How many pounds in 3138 farthings?

Ans. £3 5*s.* 4*d.* 2*far.*

12. In 1549 farthings, how many pounds?

Ans. £1 12*s.* 3¼*d.*

13. In 1046 pence, how many pounds?

Ans. £4 7*s.* 2*d.*

14. In 6169 pence, how many pounds?

Ans. £25 14*s.* 1*d.*

LESSON XVII.
Exercises in Denominate Numbers.

1. How many minutes in two hours?
                                    Ans. 120.

2. How many seconds in a day?   *Ans.* 86400.

3. How many seconds in a week?
                                    Ans. 604800.

4. How many seconds in a year?
                                    Ans. 31557600.

5. How many barleycorns in a mile?
                                    Ans. 190080.

6. How many inches in a mile?   *Ans.* 63360.

7. How many inches in a furlong?   *Ans.* 7920.

8. How many inches in a rod?   *Ans.* 198.

9. In 59*mi.* 7*fur.* 38*rd.* how many rods?
                                    Ans. 19198

10. In 194656 *bar.*, how many feet?
                                Ans. 5407*ft.* 1*in.* 1*bar.*

11. 115188 rods, how many miles?
                                Ans. 359*mi.* 7*fur.* 28*rd.*

12. In one pound, avoirdupois, how many drams?
                                    Ans. 256.

13. In one quarter, avoirdupois, how many drams?
                                    Ans. 6400.

14. In one hundred, avoirdupois, how many drams?
                                    Ans. 25600.

15. Reduce 94 *T.* 19*cwt.* 1*qr.* to quarters.
                                    Ans. 7597*qr.*

16. Reduce 108910592 drams to tons.
                                Ans. 212 *T.* 14*cwt.* 1*qr.*

17. Reduce 2998128 ounces to tons.
                            Ans. 92 *T.* 13*cwt.* 3*qr.* 8*lb.*

LESSON XVIII.

Exercises in Denominate Numbers.

1. In one square foot, how many square inches?
Ans. 144.

2. In one square yard, how many square inches?
Ans. 1296.

3. In one square perch, how many square inches?
Ans. 39204.

4. In one rood, how many square inches?
Ans. 1568160.

5. In one acre, how many square inches?
Ans. 6272640.

6. In 19 *A*. 2 *R*. 37 *P*. how many square poles?
Ans. 3157.

7. In 37456 square inches, how many square feet?
Ans. 260 *sq. ft.* 16 *in.*

8. In 14972 square rods, how many acres?
Ans. 93 *A*. 2 *R*. 12 *P*.

9. In one pint, wine measure, how many gills?
Ans. 4.

10. In one quart, wine measure, how many gills?
Ans. 8.

11. In one gallon, wine measure, how many gills?
Ans. 32.

12. In one barrel, wine measure, how many gills?
Ans. 1008.

13. In one hogshead, wine measure, how many gills? Ans. 2016.

14. In one pipe, wine measure, how many gills?
Ans. 4032.

15. In one tun, wine measure, how many gills?
Ans. 8064.

LESSON XIX.

Exercises in Denominate Numbers.

1. In beer measure, how many pints in a quart?

2. In one gallon, beer measure, how many pints?
<div align="right">*Ans.* 8.</div>

3. In one barrel, beer measure, how many pints?
<div align="right">*Ans.* 288.</div>

4. In one hogshead, beer measure, how many pints? *Ans.* 432.

5. Reduce, in beer measure, 47*bar.* 16*gal.* 4*qt.* to pints. *Ans.* 13672*pt.*

6. In 27*hhd.* of beer measure, how many pints?
<div align="right">*Ans.* 11664.</div>

7. In 55882 pints of beer, how many hogsheads?
<div align="right">*Ans.* 129*hhd.* 13*gal.*</div>

8. In 64972 quarts of beer, how many barrels?
<div align="right">*Ans.* 451*bar.* 7*gal.*</div>

9. In one peck, dry measure, how many pints?
<div align="right">*Ans.* 16.</div>

10. In one bushel, dry measure, how many pints?
<div align="right">*Ans.* 64.</div>

11. In one chaldron, how many pints?
<div align="right">*Ans.* 2304.</div>

12. In 372 bushels, how many pints?
<div align="right">*Ans.* 23808.</div>

13. In 5 chaldrons, 31 bushels, how many pecks?
<div align="right">*Ans.* 844.</div>

14. In circular motion, how many seconds in one minute? *Ans.* 60.

15. How many seconds in one degree? *A.* 3600.

16. In one circle, how many seconds?
<div align="right">*Ans.* 1296000.</div>